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ISSUES AND CHALLENGES AT THE POWER MARKETING ADMINISTRATIONS

HEARING

BEFORE THE

SUBCOMMITTEE ON
WATER AND POWER

OF THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

TO

EXAMINE ISSUES AND CHALLENGES AT THE POWER MARKETING ADMINISTRATIONS

MAY 15, 2019

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ISSUES AND CHALLENGES AT THE POWER MARKETING ADMINISTRATIONS

WEDNESDAY, MAY 15, 2019

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The Subcommittee met, pursuant to notice, at 3:03 p.m. in Room SD–366, Dirksen Senate Office Building, Hon. Martha McSally, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARTHA MCSALLY, U.S. SENATOR FROM ARIZONA

Senator MCSALLY. The hearing of the Senate Energy and Natural Resources' Subcommittee on Water and Power will come to order.

The purpose of today's hearing is to look at the issues and challenges at the Bonneville, Southeastern, Southwestern, and Western Area Power Administrations, also known as BPA, SEPA, SWPA, and WAPA, and in the future, that is what we will refer to them as.

For 80 years, our federal power system has been providing clean renewable hydropower generated at the Bureau of Reclamation and Army Corps dams and delivered to our communities throughout these four Power Marketing Administrations (PMAs). Today, Reclamation, the Corps, and PMAs generate and transmit over 35,000 megawatts of wholesale electricity across 34,000 miles of transmission lines. This represents 44 percent of all hydropower produced in the U.S. and powers over 60 million homes, farms, and businesses in 33 states. The benefits this power brings to our communities are made possible only through the partnerships between the PMAs and their municipal, cooperative, and Tribal preference customers.

In Arizona, we know this firsthand. The affordable hydropower delivered by WAPA to our cooperative and municipal utilities has helped keep power bills low and allowed for our economies and populations to grow. But as with all long relationships, there are often rough patches and disagreements. I am sure this is true of all the PMAs, but we have certainly had some unique issues arise in the Desert Southwest.

While we do not always see eye to eye with WAPA, we have shown how to work through the differences, and things have improved in recent years. Transparency is the key to this improvement. When customers are allowed at the table for decisions that

will affect their rates and service, it keeps the primary mission of delivering reliable, cost-based power in focus for everyone. But to ensure these better times continue, it will require consistent vigilance and effort by both WAPA and the other PMAs, the customers, and Congress in our oversight role.

There are also a number of broader issues and emerging challenges that I look forward to discussing with the panel today. Chief among them in my view is the long-term competitiveness of the PMAs. The upward trend of PMA rates and cheap power on the market have left wholesale contracts of some customers underwater. This could get out of control real fast if we don't take it seriously, and we all have a role in making sure that doesn't happen.

The PMAs themselves, in conjunction with the customers, must continue to take a hard look at costs and financial stability and must not take their customers for granted. Congress has an important role in this as well. We cannot saddle the federal power system with new direct costs, regulatory burdens, or ancillary missions, and we cannot let federal agencies do this either. If we allow these agencies to be treated like piggybanks or test beds, it will threaten the long-term success of the PMA model.

I look forward to hearing from our panel about how we can protect and improve on the use of federal hydropower and transmission resources.

With that, I now turn to my Ranking Member, Senator Cortez Masto.

STATEMENT OF HON. CATHERINE CORTEZ MASTO, U.S. SENATOR FROM NEVADA

Senator CORTEZ MASTO. Thank you. Thank you, Chairman McSally, for calling this hearing on the Power Marketing Administrations. In 33 states, PMAs manage a unique relationship between the Federal Government and energy customers, marketing the cost-based federal hydropower that truly built the West. These organizations knit together many communities in states like Nevada by providing the most basic service: affordable, reliable, clean energy.

So I thank the panelists for traveling here today to testify, and I extend a warm welcome to Administrator Gabriel, whose Western Area Power Administration serves my home state, as well as the other Administrators and Ms. Fuller, who represent the vital perspective of the preference customers. Thank you all for being here today.

I want to first highlight the agreement on both sides of the aisle on maintaining public ownership of the Power Marketing Administration transmission assets paid for and maintained by customers. These assets are a valuable public good, and it would be unwise and shortsighted to privatize or sell them off to the highest bidder. These transmission lines and the services they provide bring together the members of this Committee just as they connect so many of the communities and energy resources in the states we represent.

Despite several proposals put forward by the current Administration, transmission assets and other infrastructure managed by the PMAs need continued investment, maintenance, and potentially even expansion. Rather than turn our backs and sell off this vital

infrastructure, I see an opportunity to build successful programs like WAPA's Transmission Infrastructure Program, or TIP, which has already financed two transmission lines in Arizona and Montana with several more proposals under consideration. Instead of standing by while the current Administration's politics interfere with TIP's financing authority, this Committee should strengthen and defend it and even consider how its model could be applied in other states and PMAs or for other uses.

We are in a period of rapid changes in the energy landscape as we move away from fossil fuels and toward increased renewables and electrification across America. This means the nation's electric transmission needs will continue to grow.

One study from the National Renewable Energy Lab indicated that expanding the grid to connect its eastern and western sections would enable a more flexible system and reduce greenhouse gas emissions. It is impossible to think about infrastructure in the West without considering drought and water availability, the lifeline of the PMAs. And the science points to greater risk of more frequent and severe drought along with reduced snowpack, a potentially devastating change for western States like Nevada.

Timing is everything in hydropower. Changing precipitation patterns pose a fundamental threat to low-cost power that is key for economic prosperity in my home state, not to mention impacts to the environment, human life and property, and other sectors of the economy, like recreation.

I know this challenge is front and center in ongoing PMA planning efforts. I look forward to hearing from our panelists on this topic because it underscores the threat of climate change for our communities out West. Inaction and poor planning may lead to greater risks and higher costs across each of the PMAs. When delivering basic services like water and power, there is no room to deny the obvious: the climate is changing, and we need to plan for this in the PMAs.

Finally, I recognize that electricity markets have been and still are changing dramatically. Flattened demand for power, low-cost natural gas, solar and wind, and distributed resources are changing the resources available to and needed by customers. This is a time of great opportunity, but climate change also makes it one of incredible responsibility.

I want to make sure you have the support and access that you need at the Department of Energy to be successful, and I look to today's panel to illustrate paths forward to maintain a reliable, affordable, and increasingly clean source of power in the West and across the nation as a whole.

Thank you.

Senator MCSALLY. Thanks, Senator Cortez Masto.

We will now turn to our witnesses. We have all four PMAs represented at the hearing today, along with Nicki Fuller, Executive Director of Southwestern Power Resources Association, who is very active in the National Preference Customer Committee, APPA, and the NRECA to represent preference customers.

Thanks, everybody, for being here. I look forward to our conversation and ask that you limit your verbal testimony to five minutes. Your full remarks will be submitted for the record.

With that, the Subcommittee recognizes Mr. Mark Gabriel, the CEO and Administrator of the Western Area Power Administration.

STATEMENT OF MARK A. GABRIEL, ADMINISTRATOR, WESTERN AREA POWER ADMINISTRATION

Mr. GABRIEL. Thank you, Madam Chairwoman and members of the Subcommittee. I am Mark Gabriel, the Administrator of the Western Area Power Administration, and I am pleased to speak with you today regarding the status of WAPA as we continue to invest in a connected energy future.

In 2018, WAPA delivered more than 27 billion kilowatt-hours of at-cost hydroelectric power to customers. This power supports the prosperity and viability of rural communities, Native American Tribes, military bases, irrigation districts, and other customers, who, in turn, serve 40 million Americans in the West.

Last year, about 80 percent of our nearly 700 customers experienced stabled or decreased rates, and WAPA's rates are often among the lowest in the country. More than 94 percent of our budget comes directly from customers, and the appropriations we receive are paid back to Treasury with interest. Since 2013, we have returned $1.8 billion to Treasury to recover the original investment in dam and energy infrastructure and repay appropriations.

WAPA employees were activated to support power restoration in Hawaii, Guam, and the Northern Mariana Islands as part of the Federal Emergency Management Agency's disaster response teams. We responded to July's Carr Fire in Northern California, and in an unprecedented situation, 15 transmission lines and 8 substations were out of service. Despite the challenges, we continued supplying power to the area to keep as many people energized as possible.

In 2018, cybersecurity tools identified more than 10,000 individual cases of suspicious activities on our system, and WAPA's firewalls are pinged nearly 200,000 times daily by suspicious or potentially damaging events.

We have completed more than 345 physical security assessments since 2014, and we'll complete all asset risk assessments in 2019. We are optimizing on interdependencies between our cybersecurity, physical security, and asset management programs. To better assign limited resources, achieve more effective protection for extensive assets, and contain costs, we look at grid security holistically so that each effort compliments and strengthens the other. It is a challenge, however, to expect a small subset of our customers to pay for all of the national security needs for millions of Americans in the West.

We've also been recognized for numerous innovative achievements. Our transparency efforts garnered two awards, one in corporate social responsibility by an international public relations firm, and one Gears of Government Award, which recognizes employees who deliver key outcomes for the American people. We also received two other Gears of Government Awards for helping delist a plant from the endangered species list and using a food grade chemical derivative to deter invasive birds from roosting in substations.

WAPA is exploring new technologies that can improve efficiency, security, and effectiveness of the electric grid, including unused fiber capacity and artificial intelligence. Participating in these initiatives will help us keep pace with the industry developments, modernize the grid, and invest in a connected energy future.

WAPA is also evaluating its operational risk and vulnerability to wildfires. Our thorough vegetation management programs mitigate unnecessary risk, but more can be done. We are reviewing these programs and taking steps with our state and federal partners to ensure what we are doing to prevent fires caused by power lines.

With $4.3 billion in assets, WAPA represents one of the top 10 largest transmission organizations in the nation. Annually, we expend about $1.3 billion to deliver on our mission. We need to make well-informed and realistic decisions about how to invest in our infrastructure to support future needs.

In the next 10 years, we anticipate investing $1.6 billion in our assets, and WAPA continues to work with customers to flatten peaks and anticipate its spending and provide attainable financial expectations.

The bulk of this investment will maintain and upgrade the backbone transmission assets in our system, including more than 100,000 structures along 17,200 miles of transmission lines, 322 substations, and 291 high-voltage transformers. Our asset management program is looking to more efficiently acquire those transformers by cutting the lead time for procurement in half. This effort will support life-cycle replacements and periodic system additions and allow WAPA to more quickly recover from an unexpected loss of power transformer, including a high-impact, low-frequency event.

In today's increasingly complex and connected world, success requires close collaboration and mutually beneficial partnerships to preserve the value of WAPA. Through transparent and respectful partnerships with our customers and others, we can invest appropriately to ensure our ability to supply premier power and transmission services at the lowest possible cost consistent with sound business principles.

Thank you, Madam Chairwoman. I am pleased to answer any questions that you or members of the Committee may have.

[The prepared statement of Mr. Gabriel follows:]

STATEMENT OF
MR. MARK A. GABRIEL
ADMINISTRATOR
WESTERN AREA POWER ADMINISTRATION
U.S. DEPARTMENT OF ENERGY
BEFORE THE
SUBCOMMITTEE ON WATER AND POWER
ENERGY AND NATURAL RESOURCES COMMITTEE
U.S. SENATE

MAY 15, 2019

"ISSUES AND CHALLENGES FACING THE POWER MARKETING ADMINISTRATIONS"

Thank you, Madam Chairwoman and Members of the Subcommittee. My name is Mark A. Gabriel. I am the Administrator of Western Area Power Administration (WAPA). I am pleased to speak to you today regarding the status of WAPA as we invest in a connected energy future.

WAPA is one of four Power Marketing Administrations (PMAs) within the U.S. Department of Energy (DOE). Our role is to fulfill three lines of business outlined in WAPA's mission: to market and transmit wholesale electric hydropower from 14 multiuse water projects; to provide a backbone transmission system for delivering that power; and to manage the Transmission Infrastructure Program (TIP), all to the benefit of the American public. WAPA markets and transmits hydropower from 57 Federal dams operated by the Bureau of Reclamation (Reclamation), the U.S. Army Corps of Engineers, and the International Boundary and Water Commission (IBWC). This power benefits rural economies, Native American tribes, Federal and state agencies, and others who, in turn, serve more than 40 million Americans in the West. Last year, about 80 percent of our 700 customers experienced stable or decreased rates. Our efforts to control costs, eliminate waste, and seek ever more efficient and better ways of doing business help keep rates among the lowest in the country and support economic prosperity and viability of the Western U.S.

In this testimony, I present WAPA's continuing commitment to its Federal mission following *Strategic Roadmap 2024*. Success includes achieving and strengthening business, technology, and organizational excellence; seeking mutually beneficial partnerships; and evolving our services. Today, I will share WAPA's efforts to keep pace with changes in the energy industry; invest in a connected energy future; strengthen grid resilience; maintain affordable costs for customers; and prepare our operations, assets, and people for a dynamic energy frontier.

Hydropower Product

WAPA's footprint encompasses about 1.4 million square miles of diverse ecosystems and populations, from urban to rural, plains to mountains, and deserts to forests. Spanning 15 states, the communities WAPA serves have a wide variety of energy interests and needs; we are always

cognizant of the fact that what works in Montana will not work in California, and the needs of Arizona customers are different from the needs of customers in Colorado.

The hydropower WAPA markets, and the infrastructure that delivers it, provides unparalleled benefits to customers and citizens in the Western United States. WAPA's rates are often among the lowest in the country, and are sometimes the lowest rates for an entire state, such as in Arizona.

I extend appreciation to members of this subcommittee for the expeditious passage of S. 1057, the Colorado River Drought Contingency Plan Authorization Act. We also appreciate and including our statement in the March 27, 2019 hearing record. After years of negotiations between the states and various Colorado River users, we now have a defined path forward that will protect the value of the Colorado River for all Americans through this extended drought. WAPA continues to engage with Reclamation and state representatives to represent hydropower interests in implementation discussions. We are also analyzing the impact of the drought contingency plan on hydropower costs and the Colorado River Basins Power Marketing Fund.

In water year 2018, WAPA delivered 27.308 billion kilowatt-hours of hydroelectric power to customers, which is 106 percent of average power sales. This accomplishment was aided by better-than-average hydrology conditions across most of WAPA's territory, particularly in the Upper Midwest states of Montana, North Dakota, and South Dakota. The power WAPA sold is capable of fulfilling 100 percent of annual energy needs for more than 2.6 million average American homes, and all of this power is sold at cost.

We added a new hydroelectric facility to our portfolio in 2018. Olmsted Powerplant in Orem, Utah, represents the convergence of legacy and modern technological achievement. One of the oldest hydroelectric powerplants in the world has been made new again, and its expected output of 27 million kilowatt-hours a year will support the energy needs of more than 2.3 million people living in the area with reliable, clean, and affordable hydropower.

Our participation in energy and transmission market initiatives has delivered greater benefits than we anticipated. In 2015, WAPA became the first PMA to fully join a regional transmission organization. In addition to experiencing financial and operational benefits exceeding our conservative assumptions, above-average water conditions resulted in surplus generation sales into Southwest Power Pool (SPP) that accrued more than $48 million of additional net market revenue. These surplus sales help put downward pressure on firm power rates. In California, market agreements with the California Independent System Operator have realized $3.8 million in savings for customers since 2016, and participating in a max peaking program to optimally time hydropower sales led to another $5.7 million in revenue in 2018 alone.

We collaborate closely with the generating agencies, power customers, and other stakeholders to assure the enduring value of the hydropower product in the face of drought, new regulations, and other constraints. The Federal dam system in the United States provides several valuable services to the American people that must be appropriately balanced for the maximum benefit of all.

In the Central Valley Project (CVP), WAPA, Reclamation, and power customers have formed a customer steering committee to discuss changing market conditions in California. The most significant issues for this group include the stability of CVP power costs, reducing power bypass operations, improving the value of the resource to customers, and improving customer service.

Through responsible fiscal management, planning, innovation, and transparent communication, the value of the hydropower and the services we provide will continue to grow. Today's activities, built on the wise investments of yesterday, will benefit Americans for decades to come.

Best Practices and Accomplishments

In 2018, we refreshed our organizational core values. An organization's core values serve as a guide in making decisions and a standard for our employees' behavior and actions. They define what we expect of ourselves and the organization as a whole. Listening, integrity, curiosity, transparency, partnership, stewardship, safety, and service all play a central role in who we are as individual employees and as an organization. The core values confirm our commitments to our customers, stakeholders, and interested parties to carve a credible path forward that stays true to our mission and also accommodates a new and dynamic future.

Power Rates

WAPA's rates recover annual operations and maintenance costs and the original investment in the infrastructure, plus interest. The preference power and transmission customers shoulder these financial responsibilities on behalf of their consumers and the American taxpayer. Repaying the U.S. Department of the Treasury (Treasury) for the investments exerts downward pressure on the Federal debt. Over the past five years, WAPA has returned $1.8 billion to Treasury.

In addition to sound financial practices, services continue to evolve, in concert with our customers, to sustain affordable power and transmission rates. We recognize the importance of remaining the most cost-effective organization in the industry. Our customers expect it of us, and we expect it of ourselves. About 80 percent of our customers experienced flat or decreased rates in FY 2018. This includes more than 50 percent of WAPA's customers in Colorado, Wyoming, Montana, Kansas, Nebraska, the Dakotas, and the western sections of Minnesota and Iowa who have enjoyed stable rates following two years of rate reductions.

It also includes another 20 percent of WAPA's customers who have experienced flat rates for 10 consecutive years. More than 130 public power customers, including 44 in Arizona, 23 in Colorado and 16 in Utah, are realizing the benefits of sensibly managing operation and maintenance costs. Finally, more than 50 long-term CVP customers, about 7.5 percent of WAPA's customers, enjoyed a 13-percent midyear rate decrease after Reclamation and WAPA worked closely to identify an interim credit located in the CVPIA Restoration Fund. This interim credit allowed power customers to offset the credit towards their CVP repayment obligations, resulting in a $10 million reduction. Stable rates provide

predictability to customers and communities, encouraging economic growth and development.

WAPA is progressing toward an appropriate level of reserve balances to protect customers and consumers from fluctuating prices due to uncertain water conditions and to help fund annual operations, maintenance, and capital construction projects. WAPA's reserve funding strategy is designed to fulfill three distinct risk mitigation needs: annual operation and maintenance expenses; capital investments; and purchase power and wheeling. After years of diligent planning and working with Congress, we have eliminated excess annual operations and maintenance balances. The capital investment balance remained stable and purchase power and wheeling increased to $325 million.

Possessing and appropriately managing reserve balances do not affect energy and transmission rates. Reserve balances prevent or minimize adverse impacts to customers and better manage our capital and operations and maintenance programs during drought conditions.

Transparency

The financial data as well as detailed information about our operations are publicly available to our customers, stakeholders, Congress, and others. Building on our tradition of transparency, we uploaded 10 years' worth of information last year to "The Source" website, sharing accurate and up-to-date financial and operational information in one convenient location. The site includes meeting slides and scripts, notices to customers, updates on key activities, rate information, and more. We pledged to update this information annually, and in January we kept that promise by sharing all the fiscal year 2018 data online.

WAPA's transparency efforts were recently recognized with a Corporate Social Responsibility award for organizational transparency by a leading international public relations firm and Gears of Government awards bestowed under the President's Management Agenda. These awards recognize Federal employees whose performance and dedication deliver key outcomes for the American people.

WAPA's regions and Headquarters are dedicated to accessible and transparent communication with customers. Customers and members of the public are invited regularly to weigh in on the organization's proposed actions for its transmission system, rate-setting activities, capital investment, and expenditure plans. The Desert Southwest region negotiated a new joint planning agreement in 2018, memorializing the region's improved capital planning process to make planning, budgeting, construction, financial, and rates processes more transparent. Under the agreement, which has counterparts in all WAPA's regions, customers receive increased insight and opportunities for input into WAPA's system needs, helping improve collaboration and reliability of the grid in the Southwest well into the future.

WAPA works closely with Congressional representatives to ensure the data and information we share is consistent with the proposed WAPA Transparency Act. We welcome the opportunity to share and discuss transparency, and look forward to working with customers and Congress to leverage and improve on existing efforts.

Environment

Adhering to one of our enduring core values to respect the environment, we are committed to preserving and improving the ecosystems around the Federal dams and WAPA's transmission assets. Working with stakeholders, customers, other executive agencies, and the public, we can identify solutions to the most pressing concerns regarding the environment, including threatened and endangered species.

In 2018, the Deseret milkvetch, found only in a small area in Utah, was removed from the endangered species list due to improved analysis of the plant, thanks to a partnership between WAPA and the U.S. Fish and Wildlife Service. A partnership like this one, which contributed to delisting this unique and thriving plant and led to another Gears of Government award, is a success for the plant, supports development and growth for nearby communities and facilitates necessary infrastructure expansion to support rising populations.

Two endangered fish species in the Colorado River are recommended for downlisting from endangered to threatened, illustrating the success and effectiveness of recovery programs and relationships that seek to find win-win solutions to preserve and protect the Grand Canyon ecosystem.

Disaster response and recovery

Our charge and responsibility, fundamentally, is to keep the lights on for more than 40 million Americans. In no situation is this more evident than in responding to natural disasters and severe weather within and outside of WAPA's territory. No matter the day, time, working conditions, or distance, WAPA employees are ready and eager to do what they do best: bring electricity to communities.

As regular members of the Federal Emergency Management Agency's (FEMA) disaster response teams, WAPA employees last year were activated to support power restoration in Hawaii after a volcanic eruption and in Guam and the Northern Mariana Islands after they were struck by 2018's two strongest storms. Employees, along with others carrying out Emergency Support Function-12 responsibilities within the National Response Framework, liaise between FEMA and the local utilities on power restoration plans; visit work crews to identify priorities and needed materials; and remove barriers to acquisition and transportation.

We responded to July's damaging Carr Fire in northern California that directly affected WAPA's system and that of its customers. The Sierra Nevada region had 15 high-voltage transmission lines out of service, fires at the gates of its substations, and about a dozen hydroelectric generators out of service. Despite the unprecedented emergency situation, we continued supplying power to the area, and worked one-on-one with communities to keep as many people energized as possible.

Once the fire passed, our maintenance workers, some of whom had been evacuated and some of whom sustained fire damage to their own property, immediately went to work repairing

damaged assets, including replacing a number of steel structures destroyed by the "firenado" in Redding, California. Once we were fully energized, our staff lent support to our neighbors and Reclamation to rebuild their systems.

Public-private partnerships and technological advancements

The Administration has stressed the importance and value of public-private partnerships in revitalizing the nation's infrastructure. Public and private organizations each bring unique strengths to infrastructure development and modernization. WAPA has embarked on a number of public-private partnerships designed to improve grid reliability and security, relieve congestion, and replace aging infrastructure.

WAPA is working with Reclamation, San Luis Delta-Mendota Water Authority, and Duke-American Transmission Company (DATC) to develop the 230-kilovolt San Luis Transmission Project (SLTP). SLTP will power Reclamation water deliveries to agricultural and water users in the Central Valley. By supplying power to Federal water deliveries at sustainable and affordable rates, SLTP will support agriculture and water customers responsible for growing a majority of produce in the United States. DATC benefits by selling surplus capacity on the transmission line to recover their investment and support rising energy needs in the region.

A joint project with Southline Transmission LLC will provide about 1,000 megawatts of transmission capacity along a 360-mile path between southern New Mexico and Arizona. The Southline Transmission Project combines upgrades to existing WAPA infrastructure in Arizona and building new critical energy infrastructure in New Mexico. Teaming up with a private entity removes about $120 million in costs from power customers in Arizona, New Mexico, Nevada, and Southern California while opening economic opportunities and access to energy markets for flourishing populations.

In addition to upgrading and constructing necessary energy infrastructure, WAPA is exploring new technologies with DOE, other utilities, and customers that could improve the efficiency, security, and effectiveness of the electric grid. Participating in these initiatives will help us keep pace with industry developments, modernize the grid, and invest in a connected energy future.

WAPA owns, operates, and maintains about 5,200 miles of fiber for utility communications in mostly rural areas. As stated in February's American Broadband Initiative, we will, in consultation with DOE's Office of Electricity, complete a feasibility assessment by the end of the year to determine if excess fiber capacity can be leased to customers and broadband service providers.

We are also working with our customers to identify opportunities to interconnect transmission-scale battery storage to WAPA's system. Customers and WAPA alike can take advantage of the benefits battery storage offers, including balancing load, increasing resource diversity, and managing the variability of water.

Finally, we are working to ascertain potential projects to integrate artificial intelligence (AI) into suitable business operations. Incorporating AI is expected to improve efficiency, reduce

opportunities for errors, and liberate staff to work on other priorities. Early discussions have been constructive, and we look forward to finding innovative ways to do our business in the ever-evolving world.

In today's increasingly complex and connected world, no utility or organization can succeed alone. Success for WAPA requires close collaboration and mutually beneficial partnerships to preserve the value of WAPA's products and services for generations to come. WAPA is not looking to be on the leading edge of these changes and new technologies, and at the same time does not desire to become obsolete. Through transparent and respectful partnerships with our customers and others, we can invest appropriately in the connected energy future and ensure our ability to supply premier power and transmission services at the lowest cost consistent with sound business principles.

Investing in a connected future

Investing in a connected future requires both long-term vision and clearly defined short-term actions. *Strategic Roadmap 2024* provides the goals, vision, and expectation for the organization. The Tactical Action Plan (TAP), refreshed every two to three years, adapts and accommodates change along our journey to ensure that the Roadmap leads to a relevant and valuable future. Updated in January, the 2019 TAP centers our attention on Mission Critical Customer Services in an Evolving Industry, Grid Resilience, Asset Management 2.0, and People and Organization.

Mission Critical Customer Services in an Evolving Industry

The advent of markets in the West is the most pressing opportunity facing WAPA and its customers in the near term. Despite the indefinite postponement of a six-utility effort to join the SPP regional transmission organization, we continue to collaborate with our customers and neighbors to develop strategies that maintain the ongoing reliability and economic efficiency of the electric system in our territory.

Internally, WAPA is exploring realigning our resources, clarifying our processes, streamlining our systems, and implementing modern technologies to accommodate several industry changes, including markets, so that we may continue to meet customer needs with the efficient and responsive services we have in the past. A stronger WAPA is a stronger business partner to build our desired energy future.

While the market environment evolves in the West, WAPA remains committed to reliable grid operations. Our regions are preparing to transition to new reliability coordinators this year, and our operations staff are working with several entities to promote a smooth transition to the new service providers. The Western Electricity Coordinating Council, a North American Electric Reliability Corporation regional entity, commended WAPA this year on its steady improvement in meeting reliability standards. An audit team ranked WAPA as one of the highest-performing transmission operators reviewed in 2018, noting several improved practices over the past two years. This accolade is due in large part to our professional staff who take personal

responsibility in doing what is right and safe for grid operations, as well as WAPA's goal to meet the spirit of compliance.

Grid Resilience and National Security

One of the most significant challenges facing the energy industry as a whole is the targeting of electrical infrastructure by those wishing to disrupt America's economy and society.

WAPA continues to focus its attention on safeguarding our valuable assets and improving the resilience of the entire system. We have completed more than 345 physical security assessments since 2014, and 316 remediation items were implemented in fiscal year 2018. We are scheduled to complete risk assessments for all our assets in 2019. In addition, the Office of Security and Emergency Management is implementing new baseline security standards across the enterprise to better align resources to asset criticality. By proportionately assigning resources to our most critical assets instead of a "one-size-fits-all" approach, we expect to realize more than $1 million in savings over the next several years while providing the most effective protection to our extensive assets.

In 2018, cybersecurity tools identified more than 10,000 individual cases of suspicious activity on our system. More than 97 percent of these were investigated and resolved in two days. In an average day, WAPA's firewalls are pinged nearly 200,000 times by suspicious or potentially damaging events. Aggressive education and training programs have strengthened employees' ability to recognize and defend against phishing, the primary technique used by hackers to access secure systems.

As our security posture and awareness have matured, we have discovered interdependencies between our Cyber Security, Physical Security, and Asset Management programs. By looking at grid security holistically, wherein each effort complements and strengthens the other, we can more efficiently and cost-effectively defend our infrastructure from attacks. Physical Security and Cyber Security teams are working with each other and with our asset management effort to establish a tiered approach that streamlines and prioritizes programs aimed at protecting our most critical infrastructure from a whole-system perspective.

Security cannot be undertaken alone. Due to the connectedness of the bulk electric system, our neighbors and customers also have critical roles in defending the grid. To share best practices, information on current threats, and lessons learned, WAPA convenes stakeholders, security experts, customers, and other utilities to bolster the knowledge and awareness of the collective industry. Our 2018 Technology and Security Symposium looked at threats and leading practices broadly, while a smaller meeting focused on the convergence of operational and information technology to better promote resilience of certain grid components. Finally, WAPA participates in numerous forums and initiatives to improve its security posture, including more than 20 associated with DOE agencies and National Laboratories that focus on addressing different security vulnerabilities and opportunities.

None of the measures described here are inexpensive, but they are absolutely imperative. We have no option but to make these investments in monitoring, hardening, and reconstitution

activities. We must all work together to identify leading practices, most efficient deployment of security resources, and, when possible, share in the costs of safeguarding the electric grid.

WAPA is unique in its energy, transmission, and power marketing support of several military installations and national labs, helping guarantee reliable power. WAPA provides the military with power marketing arrangements that extend beyond the maximum contract terms the installations can execute alone. These long-term contracts ensure affordable energy for decades, so the men and women in service to the country can concentrate on their primary mission.

In addition to supplying power, WAPA also supports hardening the defense critical electric infrastructure that supports our nation's most crucial facilities.

Finally, WAPA is evaluating its operational risk and vulnerability to wildfires. Wildfires tied to malfunctioning power lines have resulted in several deaths and extensive property damage in California. Although limited to California currently, much of WAPA's territory crosses wooded or grassland areas that could be prone to wildfires. Our thorough vegetation management programs prevent and mitigate unnecessary risk, but more can be done. We are reviewing these programs for adequacy and accuracy given what we now know about wildfire prevention, and working with Federal agencies such as the National Park Service and the U.S. Forest Service to sufficiently protect these valuable resources from unnecessary wildfire risk. Our regional office in California is developing plans to voluntarily meet the new standards in California Senate Bill 901 to further mitigate fire risk in that state.

Asset Management 2.0

As WAPA has $4.3 billion in assets and currently represents one of the top 10 largest transmission organizations in the Nation, we need to make well-informed, prudent, and realistic decisions about how to invest in our infrastructure to support future needs. In the next 10 years, WAPA anticipates significant investment needs in our assets. These would likely be the largest investments since the infrastructure was originally built in the middle of the 20th century. WAPA continues to work with customers to flatten peaks in anticipated spending and provide measured and attainable financial expectations. The bulk of investment will be dedicated to maintaining and upgrading the backbone transmission assets in our system, which includes more than 100,000 structures along 17,305 miles of high-voltage transmission lines, 322 substations, and 291 high-voltage transformers.

WAPA's Asset Planning and Management program, established in 2014, uses objective data combined with field expertise to manage our assets based on risk and criticality. We use these data to communicate asset needs with customers and make informed business decisions so that the right investments occur in the right place at the right time and maximize the value of maintenance and capital efforts.

The Asset Planning and Management program is expanding its database with new asset classes to better forecast and develop our annual budgets and 10-year capital plans. In the next few years, the program will incorporate health and condition factors for station batteries, two additional types of transformers, and network equipment.

The program is also seeking ways to more efficiently acquire large power transformers by reducing the lead time for procurement from two years to between nine and twelve months. Shortening the time it takes to procure this critical equipment will support lifecycle replacements, periodic system additions, and allow WAPA to more quickly recover from an unexpected loss of power transformers including a high-impact, low-frequency event.

People and Organization

The final focus of the 2019 TAP is on our people – WAPA's most important resource. Like many of our peers, we are faced with a potential talent shortage as new generations seek positions in information technology, AI, and other technology-based professions instead of the traditional energy industry. By participating in educational science, technology, engineering, and math activities, we are encouraging the next generation to pursue careers in energy as we are living in the most exciting time for electricity since electrification of the West at the turn of the 20th century.

Equally critical is developing our culture and making WAPA a place where employees wish to devote their careers. We are creating a safe, inclusive, diverse, and empowered workforce at WAPA that encourages innovative solutions to challenges and opportunities. We are creating an organization of problem solvers—a place where biologists and electricians teamed up to safely repel thousands of starlings from a high-voltage substation using a grape-juice derivative, and where linemen, in the face of new, restrictive fall-protection regulations, proactively created a safety program that became one of the leading programs in the industry.

This is not a culture that happens naturally; it must be cultivated. We empower employees to seek innovative solutions and raise issues and concerns. By encouraging curiosity and continuous learning, we can better fulfill our mission and meet the needs of tomorrow.

Program and Financing Accounts

WAPA's accomplishments and operations are primarily supported through three program and financing accounts: Construction, Rehabilitation, Operation, and Maintenance (CROM); the Falcon and Amistad Operating and Maintenance Fund; and the Colorado River Basins Power Marketing Fund. Only the CROM and Falcon-Amistad programs request funds from appropriations.

CROM, WAPA's largest account, is made up of four components: construction and rehabilitation; operation and maintenance; purchase power and wheeling; and program direction. Construction and rehabilitation supports the replacement, upgrade, and modernization of the electrical system infrastructure to sustain reliability, improve connectivity, and increase flexibility and adaptability of the bulk electric system. The operation and maintenance program replaces aging equipment, completes routine or significant maintenance, removes constraints that would impede power flows, and ensures WAPA's transmission system is at or above industry standards. The Operations and Maintenance Annual Expense Fund source, sometimes referred to as Net Zero, is a budget-neutral financing tool that begins the year with an appropriation and is continually offset as collections are received.

The Purchase Power and Wheeling program allows WAPA to meet contractual power sale commitments when hydropower is unavailable, and acts as a financial bulwark against drought. Program direction compensates WAPA's workforce that performs a broad range of business functions and directly operates and maintains WAPA's high-voltage, interconnected transmission system and associated facilities.

The Falcon and Amistad Operating and Maintenance Fund was established in the Treasury as directed by the Foreign Relations Authorization Act for fiscal years 1994 and 1995. It is administered by WAPA for use by the Commissioner of the United States Section of the IBWC to defray administrative, operations and maintenance, replacement, and emergency costs for the hydroelectric facilities at the Falcon and Amistad dams, the United States portion of which IBWC owns and operates.

The Colorado River Basins Power Marketing Fund is used to operate and maintain the transmission system for the Colorado River Basin projects to provide an adequate supply of reliable electric power in a clean, environmentally safe, and cost-effective manner.

Offsetting collections and alternative financing are used instead of, or may supplement, annually appropriated funds for a variety of WAPA activities, including annual expenses, purchase power and wheeling, and construction. These financing efforts are pursued proactively and collaboratively with customers to address funding needs.

WAPA has contained costs and staffing levels while at the same time addressing new mandatory regulations and physical security and cybersecurity requirements. This demonstrates an appropriate alignment of resources to meet the most critical needs facing the organization today.

Closing Statement

The industry is experiencing a wave of changes and opportunities, the likes of which have not been seen since the original construction of the electrical infrastructure. Through business, technology, and organizational excellence; mutually beneficial partnerships; and evolving new approaches to services and industry trends, WAPA is strategically increasing its readiness to address the challenges of tomorrow.

The legacy of WAPA has been one of powering the energy frontier, by providing electricity to homes, businesses, and towns. That valuable service persists today in the form of reliable and renewable hydropower that helps keep the economy of rural America running. We remain steadfast to our mission, yet how we accomplish it is changing. Together, we can chart the course toward securing a modern, resilient, connected energy future.

Thank you, Madam Chairwoman. I would be pleased to answer any questions that you or the Subcommittee members may have.

Senator MCSALLY. Thank you, Mr. Gabriel.

And now Mr. Dan James, the Deputy Administrator of the Bonneville Power Administration. You are recognized for five minutes.

STATEMENT OF DANIEL M. JAMES, DEPUTY ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION

Mr. JAMES. Chairman McSally and Ranking Member Cortez Masto, I'm Dan James. I am Deputy Administrator of the Bonneville Power Administration. And I'd ask that my full testimony be submitted—included in the record.

Senator MCSALLY. Without objection.

Mr. JAMES. I also bring apologies from Elliot Mainzer, our Administrator, who was not able to be here today.

BPA is the federal Power Marketing Administration serving the Pacific Northwest. We market the power generated from 31 federal dams and the Columbia Generating Station nuclear plant. We also own and operate three-quarters of the high-voltage transmission in our region, including the interties that connect the Northwest with Canada and California.

This afternoon I would like to briefly report on Bonneville's financial condition and touch on several pending issues.

BPA's financial position is sound. The agency is entirely self-financed through its rates for power and transmission services, and, of course, we receive no federal appropriations. I want to note that in 2018, BPA completed its annual payment to the U.S. Treasury of $862 million, and this repayment represents 35 consecutive years of full and timely repayment to U.S. taxpayers for their investments in the Northwest power and transmission system. The completion of this annual repayment is evidence of BPA's financial health and the ability to satisfy its obligations.

Earlier this month, the nation's major independent credit agencies reported their high ratings on non-federal debt backed by BPA. These ratings represent independent review of BPA's cost management and value. Looking forward, our financial condition and long-term costs are of paramount importance. The affordability of federal power is the cornerstone of the economic vitality of many Northwest communities. Our current long-term power contracts are up for renewal in 2028, and our customers want to know if they can renew their contracts with confidence in BPA's commercial viability.

To that end, BPA executed—is executing on its 2018 to '23 strategic plan, and we released that plan at the end of last year with four goals in mind: first, to strengthen our financial health; second, to modernize assets and system operations; third, to provide competitive products and services; and, fourth, to meet transmission customer needs efficiently and responsibly. We are executing on each of those goals.

Most immediately, through cost management, our proposed power rate increases for 2020 and 2021 are less than the rate of inflation. In addition to keeping our power rates low, we have reached a rate settlement with our transmission customers for transmission and ancillary services in the next rate period. We also reached an agreement with more than 150 customers on a new transmission tariff, which outlines the terms and conditions of our

transmission services. This new tariff and the new flexibility to regulate—to regularly update our terms and conditions will allow us to improve our commercial performance in the rapidly changing industry.

As the steward of robust but aging assets, we continue to collaborate with our federal partners, the U.S. Army Corps of Engineers and the Bureau of Reclamation. We are working with those agencies on an asset investment plan to ensure the long-term affordability and reliability of the hydropower system.

We are also pursuing discussions with these partners about the growing demands on the multiple purposes of the hydropower projects and the allocation of costs among those purposes. We see, in some instances, that the formula for cost allocation may not reflect the revised operating requirements and the associated benefits.

The electric industry in the Pacific Northwest and throughout the West is evolving rapidly. States are adopting policies to support clean electric generation and to optimize a change in resource mix. Bonneville is responding through our grid modernization initiative. This includes a focus on commercial and operational modernization. We're implementing projects to improve efficiencies, reduce costs, and help us leverage new market opportunities to increase revenues. We're also working to determine how and under what conditions the EPA can join the energy imbalance market.

This work supports our strategy, which is based on operating a commercially successful business while meeting our public responsibilities. Our environmental obligations are central to our—to those responsibilities. Last year, we reached an important agreement with Northwest States, Tribes, and our federal partners to test flexible spring operations at Columbia and Snake River dams. We also want to report that the Columbia River Treaty negotiations are underway and that the Columbia River system operation review is underway and is proceeding officially with our federal partners.

And with that, Chairman McSally, I conclude my testimony, and I'd be happy to answer questions at the end.

[The prepared statement of Mr. James follows:]

Testimony of Daniel M. James
Deputy Administrator
Bonneville Power Administration

Before the
Subcommittee on Water & Power
Committee on Energy and Natural Resources
United States Senate

May 15, 2019

Good afternoon Madam Chairwoman. My name is Dan James and I am the Deputy Administrator of the Bonneville Power Administration (Bonneville). I am pleased to be with you today. I would like to describe the significant role Bonneville plays for the communities of the Pacific Northwest, and then discuss some highlights of Bonneville's financial performance and how Bonneville is implementing its strategic plan. I'll discuss the role Bonneville is playing in evolving Western electricity markets and how Bonneville is meeting its environmental obligations while managing the affordability of its rates.

Role of the Bonneville Power Administration

Bonneville is a Federal Power Marketing Administration (PMA) headquartered in Portland, Oregon. Bonneville serves a 300,000 square mile area that includes Oregon, Washington, Idaho, western Montana, and parts of northern California, Nevada, Utah, and Wyoming with a population of about 13.5 million people. Bonneville markets electric power, provides transmission, and supports development of energy conservation throughout the region. Bonneville markets the electric power produced from 31 Federal hydroelectric projects operated and maintained by the U.S. Army Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation). Bonneville also acquires non-Federal power, including the power from one nuclear power plant, the Columbia Generating Station, to meet the needs of its customer utilities.

Bonneville maintains and operates over 15,000 circuit miles of transmission lines and associated facilities over which electric power is delivered. Bonneville's system is about three quarters of the Northwest's high-voltage electric grid. It is Bonneville's responsibility to plan for and fund the operations and maintenance of this system, while also preserving and enhancing physical security, cyber security, and overall system resilience.

It is important to emphasize that Bonneville operates on a not for profit basis. It is fully self-financed and thus does not receive annual appropriations. Bonneville currently has authority to borrow up to $7.7 billion from the U.S. Treasury which is available to Bonneville on a permanent revolving basis.[1] Bonneville's power rates and transmission rates are set to recover its

[1] As of the end of September 30, 2018, total Bonneville outstanding debt was $15.032 billion of which $7.322 billion was outstanding U.S. Treasury debt and appropriations.

costs. Its revenues from sales of surplus power help cover some of the power costs and, in turn, lower its firm power rates.

Bonneville also supports the protection, mitigation, and enhancement of fish and wildlife affected by the development and operation of the hydro system as part of its efforts to preserve and balance the economic and environmental benefits of the Federal Columbia River Power System (FCRPS).

Bonneville Strategic Plan

Last year, Bonneville released its 2018-2023 Strategic Plan, which describes how it will operate in a commercially successful manner while meeting its statutory obligations. Bonneville developed this strategic plan after listening to customers and constituents express their interests in Bonneville's commercial viability and ability to meet those obligations. The strategic plan comes at a moment when Bonneville is midway through 20-year firm power sales contracts with its preference power customers. Those customers are looking to how Bonneville will be positioned to meet their needs beyond the terms of their current contracts. The strategic plan is framed by goals to:

- Strengthen financial health
- Modernize assets and system operations
- Provide competitive power products and services
- Meet transmission customer needs efficiently and responsively

Overview of Bonneville's financial condition

Bonneville's Fiscal Year 2018 end-of-year financial results showed the agency, both for power and transmission, outperforming rate case expectations. Bonneville's net revenues ended at $471 million, which includes the results of debt management actions.

Treasury payment

The definitive measure of Bonneville's financial condition is making its annual U.S. Treasury payment in full and on time. The U.S. Treasury payment provides this measure because it is the last financial transaction Bonneville makes each fiscal year and is confirmation that Bonneville has fully met all of its financial obligations for the year.

Bonneville sets its rates to ensure that all of its costs, including the U.S. Treasury payment, can be met from power and transmission revenues. Bonneville has made its Treasury payment in full and on time for 35 consecutive years. In Fiscal Year 2018, the annual Treasury payment was $862 million including principal and interest. Bonneville's cumulative payments to the Treasury during those 35 years amount to more than $29.8 billion.[2]

[2] Since Bonneville was initiated in 1937, Bonneville has repaid $34.7 billion to the U.S. Treasury of which $15.0 billion was for principal, $16.0 billion was for interest, and a total of $3.7 billion was for irrigation assistance, O&M and pension and other post-retirement benefits.

Credit ratings

In May 2019, the three major credit rating agencies issued credit ratings on non-Federal debt backed by Bonneville. As of September 30, 2018, $7.71 billion in non-Federal debt backed by Bonneville remained outstanding. These ratings reflect independent assessments of Bonneville's financial condition. The ratings were:

- Moody's at Aa1 with a negative outlook
- Fitch at AA with a stable outlook
- Standard and Poor's at AA- with a stable outlook

2018 financial policies

In 2018, Bonneville completed two policies complementary to the objective in the strategic plan to strengthen its financial health. The Financial Reserves Policy defined the level of financial reserves Bonneville and each business line should hold; how to build financial reserves when they fall below a prescribed level; and a process to consider repurposing financial reserves when they exceed a prescribed level. The policy provides a framework to ensure Bonneville maintains a minimum of 60 days cash on hand for each business line and 90 days for the agency as a whole.

The Leverage Policy creates a strategy to reduce Bonneville's total debt compared to its assets in an effort to strengthen financial health and flexibility. Reducing debt will help Bonneville lower its interest costs, support its strong credit rating, maintain access to borrowing from the U.S. Treasury, and improve financial strength and flexibility.

Also in 2018, Bonneville extended the Regional Cooperation Debt program with Energy Northwest – the owner of the Columbia Generating Station nuclear plant – to refinance debt. The extension of this program will serve to restore or preserve Federal Borrowing capacity.

Bonneville's power rates and the decisions for the 2020-2021 rate period

In July 2019, Bonneville will complete decisions on its rates for power and transmission service for Fiscal Years 2020 and 2021. In November 2018, Bonneville proposed an increase in the average Priority Firm Power rate of 2.9 percent over the two-year period, or 1.4 percent annually, to $36.78 per megawatt-hour. The proposed rate increase is below the rate of inflation and reflects the progress we have made toward our strategic plan. It is also the product of significant program cost reductions that offset upward rate pressures while enabling us to invest in our most valuable work. With this power rates proposal, Bonneville is on track to achieve a sustainable rate trajectory.

Bonneville's Transmission rates for the 2020-2021 rate period

For transmission services, the proposed average rate increase is 3.6 percent, or 1.8 percent annually, under the BP-20 Partial Transmission Rates Settlement Agreement. The actual rate increase a customer will experience depends on the products it purchases, its load shape, resource mix and other costs.

The BP-20 Partial Transmission Rates Settlement Agreement includes the proposed rates for transmission, ancillary and control area services rates that were agreed to as part of a settlement package that also addresses the terms and conditions of transmission service under Bonneville's open access transmission tariff. Administrator Mainzer will make a final decision on the adoption of the proposed rates under the settlement in July, 2019.

Revised transmission tariff

In many ways, Bonneville's ability to achieve its strategic goals hinges on the terms and conditions of our transmission tariff – the underpinning of any transmission provider's business model. There is no question that Bonneville needs a modern tariff that can be modified over time so that the region can take advantage of opportunities in the rapidly changing industry as well as further our objectives for improving the agency's commercial performance.

Last year, Bonneville engaged in settlement discussions with transmission customers to reach consensus on terms and conditions for a transmission tariff that will apply to all of Bonneville's current and new transmission customers. This resulted in a settlement package that also includes partial settlement of the Fiscal Years 2020 and 2021 transmission, ancillary and control area services rates.

With more than 98 percent of impacted customers signing the tariff settlement, Administrator Mainzer adopted the settlement and the new tariff on March 1, 2019. Bonneville's Fiscal Years 2020 and 2021 rate case is proceeding with the transmission, ancillary and control area services rates agreed upon with the terms and conditions settlement.

Asset management and capital financing

The foundation of Bonneville's value is the base of Federal transmission assets it owns and operates, and the generating resources from which it markets electricity. Bonneville utilizes an asset management strategy to apply best-practice industry standards to manage the lifecycle costs of Federal assets. This is central to maintaining the long-term value and reliability of the power and transmission systems. Achieving these objectives for power requires collaborative, long-term planning with Bonneville's Federal partners, the Corps and Reclamation. Through the Asset Investment Excellence Initiative, the three agencies are establishing a long-term asset investment plan, and applying prioritization tools to inform investment decisions to ensure the long term affordability and reliability of the hydropower assets. Bonneville is working collaboratively with the other Federal PMAs, the Tennessee Valley Authority, the Corps, and Reclamation to evaluate opportunities to improve the cost competitiveness of Federal hydropower, including a focus on improving acquisition practices and finding operations and maintenance efficiencies. This work is also reviewing how joint project costs are allocated among project purposes and how current costs and value for hydropower generation are reflected in those allocations.

Grid modernization

In 2018, Bonneville embarked on a cross-agency grid modernization initiative. Our reliance on legacy systems and non-standard commercial practices are costly to maintain and have led us to be conservative in our power and transmission operations, planning, and marketing.

Grid modernization involves improving and modernizing transmission and generation system visibility and controls, and increasing the electricity market skills of our employees. Bonneville is focusing on five areas of effort:

- Operational modernization
- Commercial modernization
- Energy Imbalance Market implementation
- Mission critical information technology improvements
- Improvements to core business practices

Part of the grid modernization scope is Bonneville's evaluation of joining the Western Energy Imbalance Market (EIM) and enabling Federal and non-Federal resources in our service area to access that market. Joining the EIM could optimize the day-to-day operation of the power system and leverage hydropower in a market increasingly driven by intermittent renewable resources. Bonneville conducts monthly public meetings to include its customers and regional constituents in its evaluation of the EIM as it nears a decision to sign an implementation agreement with the EIM market operator this summer.

Energy conservation

In Fiscal Year 2018, Bonneville achieved 48 average megawatts of energy savings through Bonneville's conservation acquisition programs. Conservation is the highest priority resource for Bonneville to acquire in meeting its customer demand. Bonneville continues to work to refine its energy efficiency goals to target investments to meet identified resource needs.

Regional collaboration for restoring Columbia River fish and wildlife

Another of Bonneville's challenges is to meet its many fish and wildlife obligations while also contributing to the agency's financial strength and competitiveness. To do so, our Fish and Wildlife program focuses on increasing project performance and cost-effectiveness, while ensuring all funding is directed at projects with high mitigation value.

Last year Bonneville incurred additional costs as the result of a Federal court decision that mandated increased spill at eight dams on the Columbia and Snake Rivers. The Court believed the increased spill would help juvenile endangered salmon migrate to the ocean. Bonneville adopted a "spill surcharge" as a way to recover any additional costs associated with decreased power generation. Bonneville Power Services staff estimates the increased spill reduced power generation by a cost of $38.6 million. Bonneville was able to offset a portion of these costs through reductions in its programs, including the fish and wildlife program, but ultimately charged its power customers an additional $10.2 million. For Fiscal Year 2019, the Administrator determined not to use the spill surcharge, making up the difference primarily

through expected reductions in spending in other fish and wildlife program areas. For this year's operations, Bonneville and regional partners arrived at the "flexible spill agreement," an important agreement – signifying a shift in how we address our differences in the region when it comes to the management of the Columbia River System. Bonneville, the Corps, Reclamation, and the State of Washington have come to an agreement with the State of Oregon and the Nez Perce Tribe on a flexible spring spill operation while we complete an updated environmental review of Columbia River System Operations.

The flexible spill operation is testing a new approach to improving salmon survival while managing the value of hydropower generation, giving us the flexibility to generate power during the hours of the day when it is needed most. Through this new operation, we will start to learn more about the effects of higher spill on fish and other aquatic species that have previously been untested. I believe this information will help inform the development of a longer-term, sustainable solution for the management of the Columbia River.

One of the principles of the flexible spill agreement is that the operation will not cost Bonneville ratepayers more than the cost of the 2018 court-ordered spill. Current Bonneville modeling shows that the 2019 spill operation should be slightly less expensive than 2018. But the operation is still very new so we will be closely monitoring both the financial impacts of flexible spill as well as the biological impacts to salmon and other aquatic species. I want to express Bonneville's appreciation for the hard work and willingness of our regional partners to come to this agreement.

The environmental review of Columbia River System Operations that I just referenced is the continuing effort to review the multiple purposes of the Columbia River System. The multipurpose Columbia River System serves the entire Northwest, and millions of people have a stake in its operations and environmental health. The people working on the Columbia River System Operations Environmental Impact Statement (CRSO EIS), which is already almost two years in the making, are shaping the future of this system. Their work will determine how the Federal agencies balance the congressionally authorized purposes of the system, such as flood control, power generation and irrigation, against growing demands and evolving factors, including environmental impacts.

In January, we announced a new schedule for completing the CRSO EIS. This new schedule responds to an October 2018 presidential memorandum that called for Bonneville, the Corps and Reclamation to complete the CRSO EIS in 2020. The new schedule has us issuing our records of decision in September 2020. The new schedule has allowed us to build efficiencies into the process and become more focused on alternatives. We will continue meaningful collaboration with regional tribes and Federal and state agencies, and we will meet all regulatory requirements for public comment.

Last year, Bonneville and regional partners reached agreements to extend the Columbia Basin Fish Accords by up to four years pending completion of the CRSO EIS. These agreements, originally signed in 2008, led Bonneville, seven tribes, two Federal agencies, and three states to work together and take hundreds of on-the-ground habitat and hatchery actions over 10 years. The extensions will continue building on our partnerships and sustain cost-effective investments in projects that provide biological benefits to fish and wildlife.

In February, members of the Oregon Congressional delegation held a public meeting to consider efforts to rebuild endangered salmon and steelhead in the Willamette Valley of western Oregon. The Federal dams in that valley were built primarily to reduce flooding of the cities on the Willamette River including Portland and Salem. Hydropower was an incidental project purpose when the dams were built, and Bonneville has funded the power system's obligation for mitigating the impacts on fish and wildlife from the original construction and operations. As we strive to continue progress to restore salmon above the dams, the additions of fish passage facilities currently under design and possible changes to operations may have significant impact on the reasonableness of power generation at the dams.

Columbia River Treaty

The Columbia River Treaty is an agreement between the United States and Canada that jointly coordinates operations for flood risk management and hydropower generation and provides other benefits as well. The Treaty went into effect in 1964 and has been a model of transboundary water resource cooperation ever since.

We are nearing an important date for the Treaty: in 2024, the Treaty shifts from 60 years of prepaid Canadian flood control space to a less-defined flood-risk management approach. Either country also may terminate the agreement at any point after September 2024 with at least 10 years advance notice. This presents the opportunity for both countries to reconsider whether aspects of the Treaty's implementation can be modernized post-2024 so that it better reflects current realities and continues to provide appropriate benefits to the region.

I am pleased that the official negotiations between the United States and Canada for the future of the Treaty have begun. Bonneville is working with the U.S. Department of State in support of these negotiations. As the negotiations continue, the State Department expects to continue to hold periodic public meetings to inform the many interested parties in the Pacific Northwest of its progress.

Conclusion

Madam Chairwoman, I am pleased to report the tremendous progress Bonneville has made. Guided by its strategic plan, Bonneville is continuing to deliver on its public responsibilities through a commercially successful business.

Senator MCSALLY. All right. Thank you, Mr. James.

We now have Mr. Kenneth Legg, Administrator of the Southeastern Power Administration. You are welcome to testify for five minutes.

STATEMENT OF KENNETH E. LEGG, ADMINISTRATOR, SOUTHEASTERN POWER ADMINISTRATION

Mr. LEGG. Madam Chair and members of the Subcommittee, I am Kenneth Legg, Administrator of the Southeastern Power Administration. I'm honored to appear before you this afternoon.

With a staff of 44 full-time employees, Southeastern markets approximately 3,400 megawatts of power produced at 22 multiple-purpose projects, operated and maintained by the U.S. Army Corps of Engineers. Last year, Southeastern sold approximately seven billion kilowatt-hours of energy to 485 wholesale customers with revenue totaling $307 million. Regional program benefits reached over 12 million homes and businesses.

Rates are formulated to recover costs of program operation and maintenance, purchase power and transmission expenses, and amortized capital investments. Southeastern delivers federal hydroelectric power at the lowest possible cost consistent with sound business principles to public bodies and cooperatives.

In December 2017 and early 2018, 11 of Southeastern's Georgia, Alabama, and South Carolina system customers notified us of their desire to terminate their federal power contracts, representing about 85 megawatts of hydroelectric generation.

Southeastern solicited interest in receiving supplemental allocations among our other customers in that marketing system. We received positive responses from 63 customers across the five-state region. Southeastern was able to make the necessary transmission service changes, expediting most of the terminations and beginning supplemental allocation deliveries as early as January 1, 2019.

Late last week, we received formal notification from one additional customer of their desire to terminate their power contract of 13.4 megawatts. All power will be marketed with no loss in revenue prior to contract termination of these former customers.

The Water Resources Development Act of 2000 enabled hydropower customers to provide the Corps funding to improve generation infrastructure, reliability, and capability. Since 2004, Southeastern has transferred $518 million of power sales revenues to accomplish hydroelectric power equipment replacements and renewals. One of the memoranda of agreements that support these equipment rehabilitations was recently amended to facilitate work now being performed across all four rate systems.

Southeastern maintains a cooperative working relationship with its preference customers and with the Corps. Financial and operational issues are discussed regularly among members of the Southeastern Federal Power Alliance and Team Cumberland, which were established in 1991 and 1992 respectively.

Over the past 2–1/2 years, fellow administrators and I have met with Corps commanding generals to discuss topics critical to the sustainability of our respective federal hydroelectric power systems. Areas for potential cost reduction include contracting strategies, cost accounting, water storage program administration, and O&M

staffing efficiencies. Last year, the effort was expanded to also include the U.S. Bureau of Reclamation.

In spite of efforts to keep program costs as low as we can so that our rates will be competitive in today's power marketplace, our rates continue to go higher. To a large extent, this is the result of increased costs of repayment for infrastructure rehabilitation that was long past due. We are very aware of—that other renewables and energy produced with low-price natural gas provide attractive alternatives to hydropower, keeping our rates competitive, while meeting repayment obligations will continue to be a critical issue for Southeastern.

Thank you, Madam Chair and members of the subcommittee. This concludes my presentation of Southeastern Power Administration's programs, issues, and challenges. I look forward to answering any questions you have.

[The prepared statement of Mr. Legg follows:]

STATEMENT OF
MR. KENNETH E. LEGG
ADMINISTRATOR
SOUTHEASTERN POWER ADMINISTRATION
U.S. DEPARTMENT OF ENERGY
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON WATER AND POWER
U.S. SENATE
MAY 15, 2019

STATE OF THE AGENCY

Madam Chairwoman and members of the Committee, I am Kenneth Legg, Administrator of the Southeastern Power Administration (Southeastern). I appreciate this opportunity to share the current state of the agency, including program issues and accomplishments for Southeastern.

Profile of Southeastern Power Administration

The mission of Southeastern is to market and deliver Federal hydroelectric power at the lowest possible cost, consistent with sound business principles, to public bodies and cooperatives in accordance with Section 5 of the Flood Control Act of 1944 (16 U.S.C. 825s).

With a staff of 44 full-time employees, Southeastern markets approximately 3400 megawatts of power produced at 22 multiple-purpose projects, operated and maintained by the U.S. Army Corps of Engineers (Corps). The projects are separated into four marketing systems and serve an 11-state area. Each system is integrated hydraulically, financially, and electrically, with separate rate and repayment schedules. In FY 2018, Southeastern sold nearly seven billion kilowatt-hours of energy to 485 wholesale customers with revenue totaling $307 million. Those benefits reached over twelve million homes and businesses.

Southeastern coordinates the operation of the Corps projects from our dispatch center using customers' load schedules and the North American Electric Reliability Corporation's (NERC's) power balancing control performance criteria, while complying with the Corps' operational and environmental requirements.

Southeastern does not own or operate any transmission facilities, but delivers contracted Federal power through transmission lines and substations owned and operated by neighboring utility companies. Southeastern compensates these transmission providers using the revenue from electrical power sales.

Rates are formulated to cover all of Southeastern's costs, as well as all of the Corps' costs allocated to power. Rate schedules are designed to recover, on an annual basis, operation and maintenance expenses, purchased power and transmission expenses, and expensed interest. Rates also include the costs of capital investments that are recovered over a reasonable number of years.

In addition, Southeastern performs its mission in a manner that promotes maintaining and upgrading our region's Federal energy infrastructure. These efforts help to ensure reliable and efficient delivery of Federal power, which is an integral part of the Nation's security and electric energy supply.

Program Goals and Accomplishments

Federal Power Program Sustainability

Southeastern is committed to the mission detailed in our governing legislation, the Flood Control Act of 1944, to employ sound business principles in delivering power to our customers at the lowest possible rates. In 2020, Southeastern will propose new 5-year rates for the Cumberland and Kerr-Philpott marketed electrical systems. The Federal Energy Regulatory Commission (FERC) confirms all of Southeastern's rates on a final basis.

Prior to the 2008 economic downturn, our power customers forecast their anticipated load growth and acquired additional capacity to meet their expected demand. A decade later, actual loads lag well behind projections and many Southeastern customers are purchasing capacity they cannot use. Municipalities and electric cooperatives in Southeastern's service area will make economic decisions to eliminate paying for excess capacity.

Southeastern received a letter dated December 21, 2017, from a power sales customer of more than 60 years providing a two year notice of termination of the municipality's power sales contract with Southeastern. In early 2018, ten additional preference customers notified Southeastern of their desire to terminate their Federal power contracts for a combined total of more than 85 megawatts of relinquished hydroelectric generation in 2020. Southeastern solicited interest in supplemental allocations of the affected marketed system customers. Due to the response of interest in supplemental allocations from 63 cooperatives and municipalities across five states, Southeastern was able to coordinate transmission service, expedite most of the terminations, and grant supplemental allocations as early as January 1, 2019. All power will be marketed with no loss in revenue prior to contract terminations of these former customers.

Federal Hydropower Infrastructure Investment

Section 216 of the Water Resources Development Act of 1996, as amended by section 212 of the Water Resources Development Act of 2000 (33 U.S.C. 2321a), enables hydropower customers to provide the Corps funding to improve generation infrastructure reliability and capability. Since 2004, at the direction of our customers, Southeastern has transferred $518 million of energy and capacity sale receipts to accomplish hydropower equipment replacements and renewals.

The Commander of the Corps' South Atlantic Division, the President of the Southeastern Federal Power Customers, and I signed an amendment to the Memorandum of Agreement on February 19, 2019. The amendment formalizes procedural changes that have evolved since the inception of this unique funding arrangement but most importantly, gives our Florida customers the ability to fund major maintenance work and assure the reliability of the Jim Woodruff System.

Southeastern's Cumberland System customers have agreed to fund $1.2 billion of planned rehabilitations of the nine hydroelectric facilities in the Corps' Nashville District. The first generator and turbine replacement is complete and operational at Center Hill Project. In addition to increasing marketable output, the new turbines have the capability to alleviate seasonal operational restrictions due to downstream environmental concerns. Customers have authorized funding to rehabilitate both the Barkley and Old Hickory Projects. The Corps will have the majority of the required funding by the end of Fiscal Year 2019.

Rate Development

Southeastern develops proposed power system rates that are placed into effect on an interim basis by DOE and are approved on a final basis by FERC for five-year terms. Annual adjustments, based on actual operational results and infrastructure investment placed into service, enable rates to respond accordingly within the term to assure proper repayment. Southeastern reviews all marketed system rates annually to ensure that revenue is adequate to meet repayment obligations. Southeastern will continue to work openly with customers to improve the rate development process.

Compliance Requirements

In order to maintain compliance with NERC and SERC Reliability Corporation reliability standards, Southeastern will continue to ensure that its power system operators are recertified as necessary. These are important positions we work to retain and attract to our small community, so available power can be delivered to the transmission system for the benefit of Southeastern's customers and the Nation.

Southeastern's Relationship with Customers and Partners

Southeastern maintains a cooperative working relationship with its preference customers and the Corps. Financial and operational issues are discussed regularly among members of the Southeastern Federal Power Alliance and Team Cumberland. The Alliance was established in 1991 and includes representatives from Southeastern, the Corps' South Atlantic Division, and Southeastern's preference customers located in the Georgia-Alabama-South Carolina, Kerr-Philpott, and Jim Woodruff Systems. Team Cumberland was formed in 1992 and includes representatives from Southeastern, the Corps' Great Lakes and Ohio River Division, and Southeastern's preference customers located in the Cumberland System. Both groups meet on a biannual basis.

Over the past two and a half years, fellow Administrators and I have met with Corps Commanding Generals to discuss topics critical to the sustainability of our jointly managed Federal Hydroelectric Power Systems. Areas identified where changes can reap benefits include infrastructure acquisition strategies, cost accounting, water storage program administration, operations and maintenance staffing efficiencies and common messaging communication plans. In 2018, the effort was expanded to also include the Bureau of Reclamation. We look forward to making further progress on the issues identified in order to improve and add value to the Federal hydropower program, especially during times of competitive energy markets and substantial re-investment in the infrastructure assets.

Southeastern's FY 2020 Budget Request

Southeastern's FY 2020 Budget requests a net appropriation of $0 (Attachment 1). It provides $6.6 million for Program Direction expenses, which are completely offset by collections for these annual expenses and use of prior year balances, and $80.4 million for Purchase Power and Wheeling costs, which are entirely financed with offsetting collections and net billing. Southeastern relies on existing transmission providers to transmit Federal power to its customers at an estimated annual cost of $45 million. In recent years, dependent on hydrology and energy market volatility, Southeastern has purchased between $4 million and $85 million in replacement power and pumped storage energy. The use of offsetting collections and net billing enables Southeastern to operate more like a business by allowing Southeastern's revenues to pay for purchase power and transmission costs rather than relying on appropriations. There are no new program starts included in Southeastern's FY 2020 Budget Request.

Thank you again for the opportunity to submit this testimony.

Attachment 1

Southeastern Power Administration
Overview
Appropriation Summary by Program
(dollars in thousands)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs. FY 2019 Enacted
Southeastern Power Administration				
Purchase Power and Wheeling (PPW)	66,070	68,824	80,419	11,595
Program Direction (PD)	6,379	6,500	6,597	97
Subtotal, Southeastern Power Administration	**72,449**	**75,324**	**87,016**	11,692
Offsetting Collections, PPW	-51,000	-55,000	-65,715	-10,715
Alternative Financing, PPW	-15,070	-13,824	-14,704	-880
Offsetting Collections, Annual Expenses, PD	-6,379	-6,500	-6,597	-97
Total, Southeastern Power Administration	**0**	**0**	**0**	0
Federal FTEs	**44**	**44**	**44**	0

Senator MCSALLY. Thank you, Mr. Legg.

We now have Mr. Mike Welch, Administrator of the Southwestern Power Administration. You have five minutes to testify.

STATEMENT OF MIKE WECH, ADMINISTRATOR, SOUTHWESTERN POWER ADMINISTRATION

Mr. WECH. Madam Chairwoman and members of the Subcommittee, I am Mike Wech, Administrator of Southwestern Power Administration. Thank you for the opportunity to be here today.

For over 75 years, Southwestern has worked with Congress, our customers, and other stakeholders to successfully market and deliver federal hydropower at the lowest cost consistent with sound business principles. As one of four Power Marketing Administrations in the nation, Southwestern markets a little over 2,000 megawatts of capacity from 24 multipurpose projects owned by the U.S. Corps of Engineers.

On average, Southwestern markets 5.6 million megawatt-hours of energy each year, bringing in about $200 million in revenue. This revenue comes directly from the rates we charge our customers. It's used to repay the investment with interest in the facilities we operate and the personnel we employ to run our program. In short, Southwestern recovers every penny we spend through the rates we charge our customers.

We serve 102 customers. They, in turn, serve another 10 million end users in Arkansas, Kansas, Louisiana, Missouri, Texas, and Oklahoma. Within our region, our system of reservoirs is almost entirely dependent upon rainfall. Water storage is measured in months, not years. When drought occurs, we must purchase power to replace the hydropower that cannot be generated so that we can continue meeting the obligations to our customers.

To fund our purchases, we have historically relied on Congressional authority to use our receipts over the long-term across good water years and bad. Purchase power and wheeling balances have been available to Southwestern so that we can achieve rate stability for our customers. This authority is critical to operating our program according to sound business principles.

Sound business principles also mean keeping costs down. Historically, leasing our headquarters in Tulsa, Oklahoma, has been a large expense. We've done the research that shows by buying a facility instead of leasing, we will save our customers $12 to $18 million. Once implemented, this would be one of the biggest single cost savings in the agency's history, resulting in significant downward pressure on our customers' rates.

Another way to realize long-term cost savings is through investment in the nation's infrastructure. Our well-established customer funding program facilitates investment in the core hydropower generating plants, and I'm happy to report that our ratepayers have approved nearly $750 million to date to repair and rehabilitate this critical infrastructure.

As for investment in the transmission system, Southwestern has a long-term construction plan that prioritizes how we spend our money while keeping costs down and we work with our regional partners to make sure that our investment program aligns with regional planning strategies.

We are also engaged with our regional and national utility partners in making sure that electrical demand is met, even in crisis situations. Southwestern plans and trains to respond to bulk-power system interruptions and physical and cybersecurity threats.

We also participate in regional power system restoration exercises with the Southwest Power Pool and in national drills, such as the North American Electric Reliability Corporation GridEx program. This kind of training gives us the chance to demonstrate how we would respond to and recover from simulated coordinated threats and incidents and allows us to strengthen crisis communication skills while evaluating the lessons learned.

Southwestern's Fiscal Year 2020 request nets to an appropriation of $10.4 million, which is just under 7 percent of our $157 million total program need. The use of Congressionally-approved alternative financing and offsetting collection authorities to fund expenses and purchase power and wheeling are essential to Southwestern accomplishing its mission with these minimal appropriations.

Regardless of the funding source, all our costs are repaid through power rates charged to our customers. Generally, the more funding flexibility we have, the more efficiently we can operate our business and provide a high-value product.

Madam Chairwoman, this concludes my testimony. I'd be happy to address any questions that you or members of the Subcommittee may have.

[The prepared statement of Mr. Wech follows:]

STATEMENT OF
MIKE WECH
ADMINISTRATOR
SOUTHWESTERN POWER ADMINISTRATION
U.S. DEPARTMENT OF ENERGY

BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON WATER & POWER
U.S. SENATE

MAY 15, 2019

EXAMINE ISSUES AND CHALLENGES AT THE
POWER MARKETING ADMINISTRATIONS

SOUTHWESTERN POWER ADMINISTRATION

Madam Chairwoman and Members of the Subcommittee, thank you for the opportunity to share information about our program and the state of the agency for the Southwestern Power Administration (Southwestern).

For over 75 years, Southwestern has been marketing and delivering Federal hydropower to the heartland of this Nation. The wholesale customers we serve depend on Southwestern for competitive, reliable, domestically produced power and energy to run their towns, factories, and farms. Southwestern is proud of its role in making the region stronger, and I look forward to sharing with you today how we plan to continue our success in the future.

SOUTHWESTERN PROFILE

Southwestern markets and delivers hydroelectric power from 24 U.S. Army Corps of Engineers (Corps) multi-purpose dams with a combined capacity of 2,194 megawatts (MW). On average, Southwestern markets 5,600,000 MW-hours of energy annually, with revenue of approximately $200 million per year.

It is important to note that the revenue Southwestern receives is applied to repayment, with interest, of the Nation's investment in the generating plants, transmission equipment, communication systems, and administrative and overhead expenses associated with operating our program. Put simply, Southwestern recovers every penny we spend through the rates we charge our customers.

Southwestern also owns and maintains 1,380 miles of high-voltage transmission lines, 26 substations and switching stations, and a communications system that includes digital microwave, VHF radio, and fiber optic components. Until 2019, approximately 200 Southwestern employees and contractors were housed at our Headquarters in Tulsa, Oklahoma; our Operations Center in Springfield, Missouri; and at one of our three Maintenance Units in Gore, Oklahoma; Jonesboro, Arkansas; and Springfield, Missouri. With the recent opening of

the new Operations Center in Nixa, Missouri, Southwestern's Power Schedulers and Dispatchers have made the move to a newly commissioned facility where around-the-clock operations can be conducted more securely. This new facility integrates with Southwestern's existing infrastructure to increase reliability and energy security by providing for continuity of operations in the event of a natural disaster or other emergency.

HYDRO-ONLY SYSTEM AND PURCHASED POWER

One important thing to know about Southwestern is that it has the unique distinction of being the Nation's only electrical balancing area supported solely by hydroelectric generation. Our use of the reservoirs and river systems within our marketing area must be carefully balanced with flood control and other uses so that we can continue to meet the power needs of our customers. Furthermore, the projects we market from are almost entirely dependent on rainfall. Extended dry periods sometimes mean Southwestern must purchase replacement power and energy to meet our contractual obligations.

Current reports from the U.S. Drought Monitor characterize conditions in most of Southwestern's marketing area as near normal in terms of moisture and average in terms of temperature. Southwestern counts on spring rains to refill the reservoirs within our marketing area, giving us the fuel we need to generate hydropower through what are usually long, hot summers in our southern region.

If we don't get adequate rainfall, then Southwestern must purchase power to replace the hydropower that cannot be generated. It is important that Southwestern have access to funds when needed to plan for and meet daily contractual commitments in the dynamic energy environment. We have historically done this through Congressional authority to use our receipts over the long-term – across good water years and bad. Prior year balances have been available to Southwestern so that we are financially prepared and able to achieve rate stability for our customers. This funding authority is critical to operating our program according to sound business principles.

SAFETY AND NATIONAL ENERGY SECURITY

In operating our business, Southwestern shares the same number-one goal of every other electric utility in the Nation – safety. We have a work force that is safety-conscious, aware, alert, and engaged so that we can continue doing our part to keep the lights on. And, of course, keeping the lights on is vital to our Nation's energy security. Hydropower generators respond quickly to changes in electrical demand and therefore can provide valuable and flexible support to the bulk-power system in times of crisis.

Southwestern regularly plans and trains for emergency response to bulk-power system interruptions and physical and cyber threats, both internally and with our regional and national utility partners. In addition to our regular internal drills, we participate in regional power system restoration exercises with Southwest Power Pool, Inc. (SPP) and in national exercises such as the North American Electric Reliability Corporation (NERC) GridEx program.

This kind of planning and training provides opportunities for Southwestern to demonstrate how we would respond to and recover from simulated, coordinated, cyber and physical security

threats and incidents, which strengthens crisis communications relationships and provides an opportunity to evaluate lessons learned.

Southwestern is also actively involved in initiatives within the Department of Energy (DOE), such as researching the possibility of enhancing the Federal power system in Southwestern's region to bolster resilience and the reliability of the Nation's defense critical electric infrastructure.

RELIABILITY AND INFRASTRUCTURE

An integral part of maintaining national energy security is making sure the generation and transmission assets are working and reliable. Southwestern keeps its transmission system reliable by planning and executing repair, performing preventative maintenance, and ensuring cyber and physical security protections are in place. We have a long-term construction plan to prioritize investments, and we evaluate and plan yearly to make sure the appropriate work is being done, while striving to keep downward pressure on expenditures.

An important part of our planning process is coordinating with SPP, the Regional Transmission Organization (RTO) with which Southwestern participates, to ensure that Southwestern's transmission replacements are part of the regional transmission planning process.

We are also actively engaged in investing in the Corps-owned generating assets in our marketing region. With the Corps' partnership and the unwavering support of our customers, we have a well-established customer funding program that allows for reinvestment in critical infrastructure so that Federal hydropower will continue to be competitive for future generations.

As of 2019, nearly $750 million in funding has been approved under the customer funding program. There are over 300 completed and ongoing projects to replace or repair aging equipment such as gates, pipes, cranes, and even the roofs of the powerhouse buildings themselves. In conjunction with work on these ancillary systems, we have also tackled replacement of major equipment through partial and complete rehabilitations. Aging turbines, generators, transformers, exciters, governor systems, and all the other essential components are getting a complete overhaul, resulting in more efficient and reliable Federal power and energy for our customers and the Nation. To date, we have completed two plant rehabilitations under the program, with three more in the construction phase, and seven more in the design and planning stage.

TRANSMISSION POLICY

While we do our own internal infrastructure planning for the transmission and the generating assets, we are also involved in regional transmission system planning with the three RTOs within our six-state marketing area: SPP, the Midcontinent Independent System Operator (MISO), and the Electric Reliability Council of Texas (ERCOT).

Each of these RTOs has its own rules and policies, and Southwestern staff has spent considerable time over the past several years building relationships and learning the intricacies of how each functions in relation to the Federal hydropower program.

For several years, Southwestern staff worked diligently with SPP staff to implement credits for network transmission service products offered by SPP to our customers. In 2018, we were successful in providing a reduction in SPP transmission service costs to Southwestern's customers taking SPP network service for their balance of power needs and eliminate a pancaked rate under the SPP RTO.

Southwestern actively works to provide additional value to our ratepayers in the ever-evolving atmosphere of wholesale energy markets. One current initiative we are working on is modifying our scheduling procedures so that our customers can realize maximum value from the Federal hydropower resource in combination with the other resources in their energy portfolios.

CONTROLLING COSTS, RATES, AND REPAYMENT

One of Southwestern's strategic goals is to keep costs down. Over the past several years, we have taken an aggressive look at what makes up our rate base and how we can manage costs.

In an effort to decrease annual expenses associated with leasing office space, Southwestern is currently pursuing available options to acquire a new facility to house its personnel at its Headquarters in Tulsa, Oklahoma. Based on 30-year net present value savings versus the current lease configuration, Southwestern forecasts $12.1 million to $18.1 million in total savings to our program. When implemented, this reduction in costs will be one of the largest single savings to customers in Southwestern's history and is expected to be accompanied by significant downward pressure on rates.

And though it is satisfying to identify cost savings in new places, our most dependable way of keeping an eye on costs is our annual Power Repayment Studies (PRS), conducted for each of the three rate systems in our marketing area. During the process of conducting the PRS, Southwestern reviews the projected and actual costs of operating our business to assure that sufficient revenues are being collected to repay those costs, along with the principal and interest on the Federal investment. We work within our own agency to accurately capture those costs and with the Corps to account for all costs related to the hydropower purpose at the Corps' multi-purpose projects.

SUSTAINABLE WORKFORCE

To maintain a reliable Federal hydropower product, you must have a reliable workforce. First as Deputy and now as Administrator of Southwestern, I have worked to optimize effectiveness with the following main goals: reduce costs where possible; meet DOE objectives; align related business functions; and put more focus on activities critical to Southwestern, DOE, and Southwestern's customers. Our focus is along three main business lines: Corporate Operations, Power Delivery, and Corporate Compliance.

Within these main business lines, we are focusing on recruiting and retaining employees in key areas such as financial management, contracting, system operations, reliability compliance, resources, power marketing, craft trades, and engineering.

FEDERAL HYDROPOWER COUNCIL

In addition to strong support at our own agency, it is crucial to have strong support at the generating agency to make our program a success. In Southwestern's case, this means collaborating and coordinating with the Corps. Over the past few years, we have participated in the Federal Hydropower Council, where we work with Corps regional and national senior level staff to tackle difficult issues related to procurement, project management, and general policy matters.

In short, this partnership strives to implement new processes and policies to do things better and faster and to improve the Federal hydropower product, price, and value in the evolving energy industry. Southwestern is excited about the opportunity to approach our shared issues at the highest levels of leadership to benefit the Federal hydropower program, our collective customers, and the Nation.

BUDGET HIGHLIGHTS

Southwestern's program is funded by appropriations, authority to use receipts, alternative financing, and other authorities approved by Congress. Southwestern's FY 2020 request nets to an appropriation request of $10.4 million (Attachment 1), or just under 7% of our $157 million total program need. The use of alternative financing and offsetting collection authorities to fund expenses and purchased power and wheeling are essential to Southwestern accomplishing its mission with minimal Congressional appropriations. Regardless of the funding source, all Southwestern and the Corps regional hydropower costs are repaid through power rates charged to customers. Generally, the more funding flexibility we have, the more efficiently we can operate our business and provide a high-value product to our customers.

CONCLUSION

Although we appreciate the authority to run our program according to sound business principles, we cannot do it effectively without the participation and support of others. As an agency of DOE, we work with our partners and stakeholders including our customers, the Corps, Congress, the Office of Management and Budget, Federal and state agencies, utilities, regulatory organizations, water resource groups, and the American public.

We've relied on these partnerships for more than 75 years. As Administrator, I am not about to change that. I offer my firm commitment to continue working together to reinforce positive relationships, so that Southwestern – and the Nation – can continue to be successful in the future.

Madam Chairwoman, this concludes my testimony. I would be pleased to address any questions that you or the Members of the Subcommittee may have.

Attachment 1

Southwestern Power Administration
FISCAL YEAR 2020 BUDGET REQUEST
SUMMARY
(dollars in thousands)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request
Program Direction (PD)	31,335	32,995	35,157
Operation and Maintenance (O&M)	16,680	17,006	13,639
Construction (CN)	14,932	16,875	15,067
Purchase Power and Wheeling (PPW)	50,000	60,000	93,000
Subtotal, Southwestern Power Administration	112,947	126,876	156,863
Offsetting Collections, PD (annual expenses)	-16,035	-29,695	-31,467
Use of Prior Year Balances, PD (annual expenses)	-12,000	0	0
Offsetting Collections, O&M (annual expenses)	-2,853	-5,707	-5,908
Use of Prior Year Balances, O&M (annual expenses)	-2,200	0	0
Offsetting Collections, PPW	-40,000	-50,000	-83,000
Alternative Financing, O&M	-9,042	-8,894	-6,018
Alternative Financing, CN	-9,417	-12,180	-10,070
Alternative Financing, PPW	-10,000	-10,000	-10,000
Total, Southwestern Power Administration	11,400	10,400	10,400

Senator MCSALLY. Thank you, Mr. Wech. Sorry for mispronouncing your name. My staff had a note here, and if I had looked at it, I would have said it correctly.

Mr. WECH. It's not a problem. The magical "l" appears all the time.

Senator MCSALLY. All right. Well, I appreciate it.

Last but not least, we have Ms. Nicki Fuller, the Executive Director of Southwestern Power Resources Association. You have five minutes to testify.

STATEMENT OF NICKI FULLER, EXECUTIVE DIRECTOR, SOUTHWESTERN POWER RESOURCES ASSOCIATION

Ms. FULLER. Thank you.

Madam Chairwoman and members of the Subcommittee, my name is Nicki Fuller and I am the Executive Director of the Southwestern Power Resources Association, or SPRA. It is an honor to be here today to share our customers' perspective of the PMAs and the entire federal hydropower program.

SPRA is a not-for-profit association of rural electric cooperatives and public power systems in Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas that buy power from the Southwestern Power Administration (SWPA). Collectively, SPRA's members serve nearly 10 million citizens with clean, renewable hydropower generated at Army Corps of Engineers-operated dams and marketed by SWPA. Unlike other federal programs, the federal hydropower program costs the taxpayers absolutely nothing, yet benefits millions of citizens while investing in the federal infrastructure assets.

We are proud of the work that we have done in our area with SWPA and with the Corps to be good stewards of the federal infrastructure and to ensure its viability. But to quote a common disclaimer on TV commercials, past performance is not indicative of future results. The PMAs and the federal hydropower customers face challenges that must be addressed to ensure the long-term economic viability of the program and its many associated benefits.

First, we will turn to rates and competitiveness. Dramatic market changes in recent years have increased pressure for PMA rates to be cost competitive. Unfortunately, there is a growing trend of loading PMA rates with exorbitant expenses unrelated to generation costs. In BPA alone, costs for fish and wildlife mitigation comprised roughly 30 percent of BPA's rates. BPA's customers contribute up to $750 million per year for direct and indirect fish expenditures. For the customers of the Central Valley project in California, environmental costs have pushed the price for federal hydropower over market four of the past six years.

My members have been extremely grateful to SWPA. With even with the upward pressure on rates, they've been able to hold them steady for the past six years. This was due to some extreme cost-cutting measures put into place by several SWPA administrators over the past six years, but these measures were only a Band-Aid. Greater action must be taken to ensure PMA rates remain competitive now and in the future.

We commend the PMAs for their continued efforts with the regenerating agencies both regionally and nationally to find processes and operational efficiencies as major reinvestment in federal hydro-

power takes place. Speeding up acquisitions, reducing outage times, and improving cost assignment practices will help keep federal hydropower competitive. Additionally, we would ask Congress to help us ensure that no laws are passed which would burden federal hydropower rates with even more unrelated costs.

Finally, legislation recognizing federal hydropower for the clean, renewable energy source that it is would add significant value by allowing my members to receive renewable energy credits and other renewable incentives which are properly due for their SWPA allocations.

Next we will look at transparency and customer involvement. Not only are the statutory and legal frameworks in which the PMAs operate different, the customers themselves and the relationship they have with their PMAs are diverse. At SPRA and within SWPA's footprint, we consider ourselves extremely fortunate. Quarterly, SWPA updates my board and me on all issues of importance and asks for input on measures large and small. This transparency is the key to our long and successful relationship as business partners.

Not every customer group is able to say they feel as if they have the transparency they desire or have an accurate accounting for each dollar collected through their rates. Each PMA needs to be cognizant of the needs of the not-for-profit utility customers and ratepayers paying the bills. As utility operators, we can provide insight and advice on issues faced by the PMAs. I believe, with increased communication, each PMA would find a trusted advisor in their customers to help navigate the complex and evolving world of electricity markets and distribution.

Finally, I'd be remiss for not mentioning the repeated proposals calling for the sale in whole or in part of the PMAs, which are seriously misguided and in needless distraction from the real issues at hand. As I previously stated, taxpayers do not subsidize or pay for any activity of any PMA, including SWPA; therefore, there would be no savings to the Treasury with this proposal. In fact, if federal hydropower customers did not pay the power rates, the taxpayers would have to fund the joint use costs for the dams currently included in the PMA power rates. This proposal would cause increased power bills for primarily rural end users across the country while not saving the Treasury a single dollar.

Madam Chairwoman, this concludes my testimony. I look forward to any questions you might have. Thank you.

[The prepared statement of Ms. Fuller follows:]

STATEMENT OF
MS. NICKI FULLER
EXECUTIVE DIRECTOR
SOUTHWESTERN POWER RESOURCES ASSOCIATION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON WATER AND POWER
U.S. SENATE
MAY 15, 2019

Madam Chairwoman and members of the Subcommittee, my name is Nicki Fuller and I am the Executive Director of the Southwestern Power Resources Association (SPRA). I come before you today as the representative of the customers of the federal hydropower program across the nation. First, I want to say thank you to you, members of this Subcommittee and Congress as a whole for supporting the federal hydropower program time and time again. You have recognized the importance of this program to your constituents and worked tirelessly to protect it. Second, I want to speak about some of the great successes we have had with the federal hydropower programs. The contributions to the nation, including the vast investment in federal infrastructure, cannot be overstated. Finally, I want to speak about some of the challenges we face. These challenges are not insurmountable, but will require your help to ensure federal hydropower is an economical and sustainable program both now and in the future.

SPRA is a voluntary, not-for-profit organization of rural electric cooperatives and public power systems in Arkansas, Kansas, Louisiana, Missouri, Oklahoma and Texas which serves nearly 10 million regional citizens. These cooperatives and systems are customers of Southwestern Power Administration (SWPA), a Power Marketing Administration (PMA) which is a part of the Department of Energy (DOE). There are four PMAs- Bonneville Power Administration (BPA), Western Area Power Administration (WAPA), SWPA, and the Southeastern Power Administration (SEPA). These entities market hydroelectric power generated at multi-purpose Army Corps of Engineers (Corps), Bureau of Reclamation (BOR), and International Boundary and Water Commission (IBWC) water projects to 1,200 public power systems and rural electric cooperatives in 33 states, as well as other public agencies, federal installations, and investor-owned utilities in special circumstances. In total, federal hydropower serves approximately 150 million U.S. citizens with clean, renewable hydropower.

Each PMA and the customers they serve are unique in statute, but alike in mission. The Flood Control Act of 1944 (58 Stat. 887, 890; 16 U.S.C.A. 825s) is SWPA's main authorizing legislation and is applicable to each of the PMAs. Through Section 5 of this Act, Administrators are required to "transmit and dispose of ... power and energy in such manner as to encourage the most widespread use thereof at the lowest possible rates to consumers consistent with sound business principles."

Unlike most federal programs, the PMAs like SWPA pay their own way. Every dollar spent on the federal hydropower program is repaid with interest through rates charged to customers. This includes the costs of construction, operation and maintenance, and transmission of generating and marketing the hydroelectric energy.

Through permanent and annual Congressional authority, the PMAs today operate mostly off funding received from revenues collected through power sales. Annually approved use of receipts authority for SEPA, SWPA and WAPA fund operating expenses and purchase power and wheeling (transmitting) costs. When hydropower cannot be generated in a drought situation or when the water at the dams is used for purposes other than for electricity production (such as recreation and environmental mitigation), the PMAs purchase power on the open market to replace hydropower product. The purchase power and wheeling funding authority is important to ensure the PMAs can meet contractual commitments. Today, only a fraction of funding for SWPA and WAPA comes from traditional appropriations. These important but diminishing appropriations fund capital and transmission infrastructure efforts. For SWPA, the net appropriations from Congress is only 7% of their total operating budget. However, these appropriations- plus all other expenses for SWPA and for the Corps' costs for hydropower and a percentage of joint use expenses- are included in the rates that the customers pay. The taxpayers do not subsidize or pay for any activity of any PMA, including SWPA. This deserves repeating – the federal hydropower customers, your constituents, pay for all costs, and in some instances more than we should be paying.

CUSTOMER FUNDING OF ENERGY INFRASTRUCTURE

With all the discussion of "Public Private Partnerships" or "P3", I want to inform the Subcommittee about the long, successful P3 program utilized by the PMAs and the generation agencies in cooperation with the federal hydropower customers. Beginning in the 1990s, federal hydropower customers began noticing increased unscheduled outages at Corps and BOR hydropower plants. These outages were increasing costs to the PMA customers because outages often make it necessary for PMAs to purchase expensive replacement energy to meet their contractual obligations to their customers. Further, the federal budget cycle added to costs by delaying equipment repair and/or replacement.

Though outages were increasing, SWPA saw significantly decreased appropriations for hydropower infrastructure investment. Reduced appropriations to the federal power program does not represent savings to the U.S. Treasury. Fortunately, in 2000 Congress approved a mechanism allowing customers to provide funding to the Corps for needed hydropower infrastructure investment through power rates charged by SWPA.

With this in mind, SPRA in partnership with the Corps and SWPA, developed the Trust Memorandum of Agreement (Trust MOA). Under this agreement, the customers meet with the Corps and SWPA to determine the funding needs for the following fiscal year. Together, we rank projects based on need and risk of failure and then choose the projects that should be funded in the next fiscal year. This cooperative process allows the customers, the ones who pay the expenses, to have input on how their money is spent and it allows the Corps to have a predictable revenue stream to sustain this federal infrastructure. We have committed to the Corps that we will fund through the Trust MOA about $2.4 billion for hydropower infrastructure over the next 30 years to complete rehabilitation of all 24 Corps hydropower plants marketed by SWPA. Through this process, we are able to keep local control and oversight, sustain federal infrastructure, and assure the longevity and future of the federal hydropower program.

Some version of customer-funding takes place in cooperation with each PMA, utilizing that region's specific needs and authorities. Through these efforts, PMA customers across the country have spent billions of dollars rehabilitating and replacing the nation's vital energy infrastructure.

CHALLENGES:

The PMAs are a rare federal program. For the most part, these are entities that provide a much-needed service to the nation while paying their own way- with interest- without costing the taxpayers a single cent. In addition, they pay the joint-use costs for dams that would otherwise create one more expense to the Treasury. That is not to say, however, that there are not challenges which face these entities and its customers.

Proposal to Sell the assets of the PMAs

The proposal to sell the assets of the PMAs threatens the very program which has successfully served my members for over 75 years. Let me repeat, the taxpayers do not subsidize or pay for any activity of any PMA, including SWPA. Therefore, there would be no savings for the Treasury with this proposal. In fact, if the federal hydropower customers did not pay the power rates, the taxpayers would have to fund the joint-use costs for the dams currently included in PMA power rates. This proposal would cause increased power bills for primarily rural end-users across the country while not saving the Treasury a single dollar.

This proposal is not a new one. Throughout history, several recent administrations of both parties have had the misguided idea that selling the PMAs or its assets would generate cost savings. However, through education by the federal hydropower customers, administrations have come to understand the fallacy in this idea and the importance of the continuation of the PMA program. In a letter to Office of Management and Budget (OMB) Director Mick Mulvaney regarding the President's Fiscal Year (FY) 2020 budget request, the American Public Power Association (APPA) and the National Rural Electric Cooperative Association (NRECA) wrote, "...there is no factual evidence that selling the transmission assets of the PMAs would result in a more efficient allocation of resources. Rather, it is much more likely that any sale of these assets to private entities would result in attempts by the new owners to charge substantially increased transmission rates to the PMA customers for the same service they have historically received. These arguments are merely a pretext for actions that would raise electricity costs for millions of people and businesses".

We are so grateful to members of Congress, including members of this Sub-Committee, who have stood firm in their resolve to protect this vital program. We are also grateful that the 63 House Members who signed a letter in opposition to this proposal have remained strong in their support of the PMAs and helped keep electricity rates low.

Rates and Competitiveness

The electricity industry has changed significantly in the past few decades. Where once my members were held captive to local generation which could only be accessed through direct transmission or transmission contracts, the energy markets and Regional Transmission Organizations (RTOs) have completely changed this method of doing business. My members are located in an area of the country which is surrounded by three RTOs. With this vast market comes the increased pressure for cost competitiveness for PMA rates.

However, even though now more than ever PMAs should be turning to reducing costs to remain competitive, there is a growing trend that must be addressed where federal hydropower rates are loaded with expenses unrelated to the generation of this power. In BPA alone, costs for fish and wildlife mitigation comprise roughly 30% of BPA rates. BPA's customers contribute up to $750 million per year for direct and indirect fish expenditures. For the customers of the Central Valley Project in California, environmental costs have pushed the price for federal hydropower over the market alternatives in four out of the six previous years.

My members have been extremely grateful to SWPA that even with upward pressure on the rates they have been able to hold them steady now for six years. This was due to some extreme cost-cutting measures put into place by several SWPA administrators over the past six years. But these measures were only a band-aid. Greater action must be taken to ensure PMA rates remain competitive now and in the future.

We commend the PMAs for their continued efforts with the generating agencies both regionally and nationally to find process and operational efficiencies as major reinvestment in federal hydropower takes place. Speeding up acquisition, reducing outage times, and improving costs assignment practices will help keep federal hydropower competitive. Additionally, we would ask Congress to help us ensure that no laws are passed which would burden federal hydropower rates with even more unrelated costs. Finally, legislation recognizing federal hydropower for the clean, renewable energy source that it is would add significant value by allowing my members to receive Renewable Energy Credits (RECs) and other renewable incentives which are properly due for their SWPA allocations.

Transparency and Customer Involvement

As I have mentioned, each PMA is very different. Not only are the statutory and legal frameworks in which the PMAs operate different, the customers themselves and the relationship they have with their PMAs are diverse. At SPRA and within SWPA's footprint, we consider ourselves extremely fortunate. For SPRA's 60+ years of existence, I and those that have come before me have made cooperation between SWPA and its customers a primary mission.

SWPA professes to view SPRA as a bit of a Board of Advisors. This customer-service approach is evident in SWPA and its employees. Quarterly, SWPA updates my Board and me on all issues of importance, and asks for input on matters large and small. This transparency is the key to our long and successful relationship as business partners. That is not to say there have not been bumps in the road along the way. However, the established practice of frequent communication has allowed these issues to be addressed in a manner which was fair to all parties.

Not every customer group is able to say they feel as though they have the transparency they desire or have an accurate accounting for each dollar collected through their rates. As with any large organization, there is always a balancing act between information sharing and potential harm from the distribution of business-sensitive material. However, each PMA needs to be cognizant of the needs of the not-for profit utility customers and ratepayers paying the bills. As federal hydropower customers, we are in the rare position of also being utility operators who can provide insight and advice on issues faced by the PMAs. I believe with increased communication, each PMA would find a trusted advisor to help navigate the difficult and evolving world of electricity marketing and distribution. It is only through partnership that we will all remain successful.

ESPCs

Several private hydropower developers and equipment suppliers have proposed legislative language that would allow Energy Savings Performance Contracts (ESPCs) at federal facilities. ESPCs would allow private interests to repair or replace hydropower generation at existing federal dams and could receive compensation in the form of electricity. This is problematic because PMA customers have already executed contracts for that electricity. And even if the contractors were repaid in dollars, it remains unclear how these private interests would receive a return on this investment because of the unique system of federal hydropower. Any revenue that these private investors would want to receive would come directly out of the pockets of the federal hydropower customers.

In addition to allowing a mechanism for private companies to make a profit out of the pockets of federal hydropower customers, this legislative language is a solution looking for a problem. Since 1999, SPRA, SWPA, and the Corps have worked together to fund over $750 million in infrastructure improvements and modernization on federally owned dams through one of the nation's first public-private partnership. The customers of SWPA have committed another $1.65 billion over the next 30 years to fully revitalize the federally owned hydropower assets in the Midwest. Programs like these exist across the four PMAs to ensure the viability and sustainability of the federal hydropower program. Not only could ESPCs raise the rates of all of the PMA customers across the country, it is completely unnecessary. This would be a detrimental rate increase providing an unnecessary and burdensome solution to an issue that has already been addressed.

In conclusion, I come to you today proud of the PMA program we have all built. We still recognize there is still work to be done to ensure all federal hydropower customers are served in the most cost-efficient and cooperative way. At SPRA, we have a strong working relationship with SWPA, which has proved invaluable for the federal hydropower customers in the Midwest. Unlike other federal programs, this program and existing partnerships costs the taxpayers absolutely nothing yet benefit millions of citizens while investing in federal infrastructure assets. We are proud of the work that we have done in our area with SWPA and the Corps to be good stewards of the federal infrastructure, and ensure its viability. These dams provide so many benefits to my region including navigation, flood control, water supply, environmental programs, and recreation. Without the federal hydropower customers paying the bills, more of the costs of these joint activities would be borne on the taxpayer. Thank you for your tireless efforts to

protect the PMAs and ensure this cost-based public power is allowed to continuing serving the needs of communities and citizens in 33 states across the Nation.

Madam Chairwoman, this concludes my testimony. Thank you for allowing me to come here today to discuss this important issue. I would be pleased to address any questions that you or the Members of the Subcommittee may have.

Senator MCSALLY. Thank you, Ms. Fuller.

We will now get on with questions, and I will start that off. Many of you touched on it in your statements, as did I in my opening statement, but the long-term competitiveness of PMA power is something we really need to be focusing on. Again, many of you started to get into it. SEPA has seen some customers relinquishing power contracts, but similar pressures exist, as you mentioned.

So the question is, can you talk a little bit more about where PMA hydro in your region sits in the overall market and efforts underway to ensure federal hydropower resources remain competitive going forward?

And Ms. Fuller, obviously, I would appreciate any additional thoughts on this issue based on the customer perspective.

We will start with Mr. Gabriel.

Mr. GABRIEL. Thank you. One of the focuses that we've had certainly in the past six years that I've been Administrator is making sure that we maintain our costs in line with what's happening in the industry. Now you have to keep in mind that WAPA really consists of 10 separate systems, each with its own financing mechanism and each with its own operating behaviors.

The good news for us is that with the exception of the California system, our market rates are—rates, rather, are significantly below those in the market. In fact, very often we are the price-maker in a market.

Now where we have challenges, as was mentioned a little bit earlier, is in California, not due to the Bureau of Reclamation or WAPA costs per se, but the Central Valley Project Improvement Act, which, in certain years, can cause the cost of our power to go out of market. Now it's an interesting challenge because the cost of that is split between the water users and the power users. And in very dry years, or, ironically enough, in very wet years, the cost for the Central Valley Project Improvement Act pushes us out of market. The actual cost of our power is very reasonable or within the market range.

I think it's also important to understand that the spot market price is not the price for long-term power contracts, and all of us deal on the longer-term basis. So really the parallel needs to look at, what is a mid-term and long-term contract by comparison?

Because, as I said, we're fortunate in Arizona, for example, we are roughly 40 percent below anyone in that marketplace. We continue to focus on three things. One is continuous process improvement, which over the past four years at WAPA has meant the elimination or avoidance of about $88 million in costs. We also focus clearly on asset management, and it's done in partnership with our customers to understand what we should fund and how we should fund it and what the timeframe is. And third, and I will say it's fortunate, we've had some very good water years. This one happens to be a good water year. That helps. And if I also may add, in the case of the Southwest Power Pool, where we join on the eastern side of our system, that has turned out to be much better than we initially anticipated. This year alone resulted in about $48 million of additional sales, which help maintain and reduce the costs for our customers.

Senator MCSALLY. Great. Thank you.

Mr. James?

Mr. JAMES. Thank you, Chairman McSally. So——

Senator MCSALLY. Can you put your microphone on again?

Mr. JAMES. Oh, yes. Sorry. Thank you. Thank you.

We—the central tenet of our strategic plan is delivering on our public responsibilities through a commercially successful business; one has to go with the other. Key to that is managing our costs. We, as I mentioned, are—have proposed a rate increase below the rate of inflation for the upcoming rate period. We are working very closely with our customers and stakeholders and the Corps and the Bureau and Energy Northwest, who operates the Columbia Generating Station, on asset investment priorities that reflect implementation of our plan.

We—I mentioned our grid modernization effort, which is meant to focus on the strategic priorities of our plan to maximize the value of the output of the FCRPS and the Columbia Generating Station. And really the central tenet of all of that is maintaining affordable rates, system reliability, and meeting our statute of—our statutory obligations. It's a balancing act. But at the end of the day, we have to have customers when our long-term contracts expire in 2028, and demonstrating trust with them that we have the ability to manage our costs for the long-term is key to delivering on the tenets of our strategic plan.

Senator MCSALLY. Great. Mr. Legg, you already mentioned that you had 63 other customers increase their request, but do you have concerns about the longer-term——

Mr. LEGG. In terms of overall marketability and sustainability, no, but we are working hard to try to reduce our prices, as Mr. Gabriel mentioned. The product we sell, as Power Marketing Administrations, is a guaranteed capacity with associated energy. In Southeastern's case, it's peak energy, and it's relatively limited. But what—so often the comparison is made with the spot market energy prices, and we fall below partly because of subsidies and other incentives for renewables.

Senator MCSALLY. Great. I am over my five minutes. I want to lead by example here. We can come back to the last two witnesses on this topic. I want to know.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you. I am going to take an opportunity to defer and ask my questions after my colleague, Senator Cantwell, and give her an opportunity. Thank you.

Senator CANTWELL. Thank you. Thank you to Senator Cortez Masto for that. I appreciate it.

I appreciate everybody's testimony today, and especially, Ms. Fuller, thank you at the end for clarifying. I was just out in the hall with a reporter who I had to explain again to them that the system is paid for by the taxpayers, and so the notion that people do not fully understand public power, they just know that we have affordable electricity, and that is what we have to continue.

I have said to many members of this Committee, anybody else who wants to pursue other ideas of cost-based power for the benefit of our nation, I am happy to pursue those because I think it is a very distinguishing feature for what drives an economy.

My colleague, Senator Risch, I know probably would love to be here but is busy on other things. But he and I plan to send a letter to the OMB, Director Mulvaney, on the fact that we do not support his idea. Thank you for articulating why that is a bad idea. I know if our colleague, Senator Alexander, was here, he would probably restate his comments about what he thought about this idea when it was previously proposed. I think he just said it's loony, and I think that kind of just sums it up. It is just a really loony idea. But behind the looniness is also a very big economic impact.

Mr. James, the Northwest Public Power Conservation Council put out that electricity rates could rise as high as 24 percent if this kind of concept were pursued. Do you have any numbers or analysis by BPA on selling off the Power Marketing Administrations?

Mr. JAMES. I don't, but we'd be happy to—we'd be happy to respond to any—any question that you would ask in writing. I'd be happy to get back to you there.

Senator CANTWELL. Do you think that we would see a big increase in price?

Mr. JAMES. I know that it would—it would be disruptive. As you know, we are prohibited by law from actually studying—studying that. But there would be a lot of uncertainty. We assume that there could be costs associated with contract—with contract changes, breach of contract claims, and workforce issues, among many others.

Senator CANTWELL. Well, unless I am mistaken, it is pretty basic. You have cost-based power, the cost that it takes to produce the power, and that is an underpinning not only of public power in the Northwest but of private power that gets and buys some of that power.

Mr. JAMES. They buy—they buy power from us. They also buy transmission services from us.

Senator CANTWELL. Exactly. So we have produced very affordable, obviously, cost-based power.

On the other side of the equation, you would basically be saying to people, let's turn this into a monetization, and the highest bidder gets to sell their electricity on the grid. So you are not going to get cost-based power, you are going to get people bidding up the price of selling power on the grid. That is only going to just keep rising the rates higher and higher and higher. And I think our job, particularly in a global economy where we are going to be competing on so many fronts, particularly in the areas of manufacturing, is to figure out, whether we are talking about natural gas or other sources of electricity, how we continue to drive down our costs, particularly on the energy side, with clean energy instead of these ideas that somehow are magically going to pay down the debt when in reality they are already paying back—BPA is already paying back more and paying down the debt.

So I agree with Senator Alexander, it is loony, just loony.

Mr. JAMES. I would say, Senator Cantwell, that one of the reasons that we are making our grid mod—or grid modernization investments is to stretch the value of the dollar that the ratepayers are paying to maximize the output of the FCRPS and to meet the region's clean energy needs.

Senator CANTWELL. If anything, I would be moving faster, and you and I and the Administrator at BPA have had this conversation. I think the Power Marketing Administration represents some great opportunities to look at next-generation technology on storage, and to almost be an incubator, if you will, on some scalable ideas of how we integrate with wind and solar and other alternatives and how we have storage solutions for the future. So we should not be throwing this great idea that has paid benefits to our country for so many years out the door; we should be doubling down on it. So thank you, and thank you for the courtesy.

Mr. JAMES. Thank you, Senator.

Senator MCSALLY. All right. Now, Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you.

I appreciate you all being here again.

Let me just address to all of you the issue of climate change. As we all know, the changing climate is impacting communities differently across the country, but what is clear is that for most communities, the impacts are not positive. In the West, climate scientists are projecting more precipitation as rain and less as snow. It turns out our snowpack is the best form of energy storage there is and less of it has huge implications on power production at federal hydro facilities.

So let me ask each one of you—and Mr. Gabriel, we will start with you—can you please describe how you are looking at the cost of changing precipitation patterns, what costs are becoming apparent, and how are you planning to manage those costs?

Mr. GABRIEL. Thank you, Senator. We live in the world where climate and weather every single day impacts both the flow of power as well as the sanctity of our transmission system. So there are several components for us. And keep in mind our service territory is very large, so weather in one part and climate in the other part can be very different. I always describe our footprint as we go from Paris to Moscow and Athens to Oslo, if you think about the geography of 1.4 million square miles. And so it's very possible in one region to have heavy, heavy snow, and the other region to not have enough snow. So each one of our ten systems we look at differently. We have to understand what happens on the Missouri system will be very different than what's happening for us in California. So our planning looks out both in terms of the short-term to understand, what are we going to need to supplement the power? That's why things like purchase power and wheeling are so critical for our customers.

The two things that customers really need: one is reasonable costs, and the other one is predictable costs. So we have to balance both our understanding of what we're going to be buying for power—should we not have it?—as well as our ability to sell excess generation when we have it to create a balance. So it's really an interesting—it's an interesting dynamic, one that changes depending on which part of our system we're operating at. The Missouri River System, for example, has two years of water. We have far less when we get to the Lower Colorado where we're operating on looking at it literally on a month-by-month basis.

So for us, it's really a balance point between dealing—taking the hand that we're dealt, also planning with our customers for pur-

chase power and wheeling, and then understanding how the market dynamics are going to be changing over the next decade or so, particularly as markets hit the West.

Senator CORTEZ MASTO. So let me ask you this, are you not seeing any changes in weather patterns over the last couple of years as compared to the previous ten years, particularly with precipitation?

Mr. GABRIEL. We're—again, this year is a perfect example. We have very heavy snowpack in virtually all of our system, right?

Senator CORTEZ MASTO. Okay.

Mr. GABRIEL. We're at 153 percent in Colorado. So that's very different than we had three years ago.

Senator CORTEZ MASTO. Right.

Mr. GABRIEL. Two years ago in California, tremendous snow. So it really varies, and predicting the weather and understanding what that long-term climate impact is is something that we look at on a very regular basis.

Senator CORTEZ MASTO. So is it safe to say that you are always going to be flexible when dealing with the weather change, and climate change is not having an impact on what you are seeing with respect to precipitation versus snow?

Mr. GABRIEL. That's what—we have to be—yeah, flexibility is critical. That's why the transmission infrastructure is so critical.

Senator CORTEZ MASTO. Okay.

Mr. GABRIEL. As I said, as we move power from one spot to the next, it really is very dependent. You can literally go over one mountain range and have plenty of snow, and then go to the other, and you don't. We have to operate on a—on a daily basis with understanding the hand that we're dealt at that moment.

Senator CORTEZ MASTO. Yes, that is fair.

Mr. James, the same thing. Are you seeing any change in the weather patterns as compared to previous, maybe ten years over the last two years?

Mr. JAMES. We are, Senator. We also are seeing different basins and different—different amounts of moisture. And, of course, we—we track that very carefully because at the end of the day, we have loads and resources that always need to match. So we need to balance the system over the course of the year, you use storage that way. You use the—you maximize the investments in the transmission system that way. We've absolutely seen that over the last—last ten years, and we're living with that kind of uncertainty all the time.

Senator CORTEZ MASTO. Thank you.

Mr. Legg, the same?

Mr. LEGG. In the case of Southeastern Power, we—we have no snowpack, so we——

Senator CORTEZ MASTO. Right.

Mr. LEGG. ——we don't have that to rely on. We are very dependent on inflows from—from rains. The Southeast has seen a lot of rainfall this year. All of our reservoirs are full to maybe a foot or so above normal in many cases.

Senator CORTEZ MASTO. Is it unusual, or do you anticipate similar rainfall next year?

Mr. LEGG. Well, for the upcoming year, we're looking at basically 50-percent chance of—above 50-percent chance below normal. So a normal—we're getting what the—what the meteorologists tell us we would normally get.

Senator CORTEZ MASTO. So this is a normal weather pattern for you.

Mr. LEGG. It is not an—as far as our history of the past ten years go——

Senator CORTEZ MASTO. It is not.

Mr. LEGG. ——we had many years of extended drought, and the reservoirs in the Southeast are shallow compared to the ones in the West. So in terms of amount of water stored in those reservoirs, it's measured in terms of weeks, not in terms of years. So, again, we're very dependent and we rely on basically whatever flows into the reservoirs, the Corps of Engineers will generate, and the output will be marketed by us.

Senator CORTEZ MASTO. I appreciate that.

Mr. Wech, you get off lucky, I am out of time.

Thank you.

Senator MCSALLY. Well, I will pick up with Mr. Wech and Ms. Fuller, if you have any comments on my last question, just related to competitiveness of hydropower in your market, steps being taken additional to what you shared already, and any concerns about the future competitiveness.

Mr. WECH. Thank you for your question. And in answer to it, in short, you heard in my testimony we're—we're making significant strides to try and be cost competitive. Last year, we reduced our office space under the GSA lease to save over $1.5 million toward the ratepayers. Right now, we're pursuing the option to purchase a new headquarters facility and not lease from the GSA at all. That's going to save $12 to $18 million, depending on the facility purchased against the net present value of the lease that we have in place.

So we're looking at every avenue we can to try and be cost competitive to save costs. We've—we've done a thorough evaluation, actually a reevaluation, of our transformer and conductor replacement strategies for power system equipment and extending the life after doing significant testing and studies to show that we can actually utilize that equipment for a longer period of time; that saves the ratepayers.

And then to go back to your original question, Where are we at in terms of cost competitiveness? We're very much like my fellow Administrators. We have what I call a dual product. We have the firm peaking energy product, which is made up of the firm transmission assets that deliver the federal hydropower, the capacity to back up the energy at the hydropower plants, and then an ancillary service product.

But we also have a surplus energy product, we call it supplemental energy. That's when we have excess water that comes into the projects from heavy rain. And so that project—excuse me—that product helps to supplement and blend with the firm power rate. When you look at us compared to market, if you just looked at our 1,200-hour firm energy contracts for peaking, we're about $61 a megawatt-hour compared to market rates of $35 on average in SPP

and MISO. If you were to blend our rate together with the surplus energy on average years that we have, we're at about $33 a megawatt compared to the $35 for market. But again, I would stress, back to Mr. Gabriel's comment earlier, don't just look at the spot energy price, look at the totality of the project and the products offered, which are the capacity, the energy, the firm transmission, and the ancillaries.

Senator MCSALLY. Great. Thanks.

Ms. Fuller, anything to add from a customer perspective?

Ms. FULLER. Sure. Just from the customer perspective, I think Mike hits it correctly, that, you know, SWPA has done a lot of cost-cutting measures, and we're very grateful. To not see a rate increase for six years is really something unprecedented in our region. So we're very lucky to have that.

But I do think competitiveness is an issue that we need to continue to be looking at. Not only do we have to be concerned about non-generation-related expenses like I spoke about in my testimony, you know, we have to make sure that—that the trend of adding those things to the rates doesn't continue. The end users at the end of the line shouldn't be responsible for shouldering those expenses.

But we also have to look to non-monetary ways to make federal hydropower more valuable. We've been working with SWPA specifically on timing issues so that we could schedule our federal hydropower consistent with timing in the three markets that we straddle. You know, those sorts of creative ways of thinking about the way that we handle federal hydro will really help increase the competitiveness.

One last thing I'll add just that would help our members is if we do have that distinction of being an actual renewable energy source, that would—it would be a huge way that our members could maintain a non-monetary value but increase the competitiveness of federal hydropower at the same time.

Senator MCSALLY. Great. Thanks.

Mr. Gabriel, as you know, the WAPA Transparency Act has been introduced the past several Congresses. Since its original introduction, WAPA has launched The Source, which contains much of the information required by the bill. Last year, the Senate made changes to the bill to clarify its scope is separate from what WAPA has already done. The question is twofold. First, is there additional information customers are asking be included in The Source? And second, could WAPA implement the Transparency Act passed by this Committee last year without having to backtrack on the progress that has already been made?

Mr. GABRIEL. The good news is I'm particularly proud of The Source, and it's been recognized by both Gears of Government Award as well as the Independent Public Relations Firm for Corporate Social Responsibility. We actually kicked off The Source prior to any of the language being necessary and worked very closely with staff to make sure that we hit all the marks that were set in the proposed legislation. From my perspective, we—we actually, in a way, almost have too much information on there. You can find just about anything about the organization. Our customers have been very pleased with it.

We've actually found an additional value, which is we use it ourselves when we're doing our analytics to better understand how WAPA is operating and also to communicate the value of WAPA. In fact, my testimony and all these comments will be posted simultaneous to this discussion because we want to operate under no secrets, have everything out there for our customers and any of our stakeholders to look at. So I am particularly proud of what we have achieved with it, and I believe it's—it's more than meeting the intent of the—what the Committee passed last year.

Senator MCSALLY. Are there any other pieces of data that would be required by legislation in your view?

Mr. GABRIEL. Not—not to my understanding. You know, we go back ten years' worth of data, and, of course, our universe has changed for all of us in the past 10 years pretty dramatically.

Senator MCSALLY. Right. Thanks.

Senator Cortez Masto.

Senator CORTEZ MASTO. Let me change the subject a little to cybersecurity. We touched on it a little in your testimonies. This Committee understands that cybersecurity is one of the biggest ongoing challenges facing the energy sector. Congress recognized the urgency, and in 2015 codified DOE as the sector-specific agency for energy cybersecurity. The DOE subsequently launched a new office focused on this growing threat just last year, the Office of Cybersecurity, Energy Security, and Emergency Response (CESER), but the challenges obviously continue. Recently, press reports disclosed that a large investor-owned utility was fined $10 million by the North American Electric Reliability Corporation in the largest cybersecurity-related penalty in history for security violations between 2015 and 2018.

And, Mr. Gabriel, you have been quoted as saying that in an average day, WAPA's firewalls are pinging nearly 200,000 times by suspicious or potentially damaging events.

So let me open it up. I am curious. And maybe we can start with Mr. Wech. But can you explain to us the unique cybersecurity challenges that you face and that you may experience that may be a little bit different than the other parts of the energy sector and what you are doing to address that?

Mr. WECH. I guess I would characterize the electric industry as one for—since its inception, has been one of cooperation and collaboration. And because we are all interconnected in terms of the bulk-power system, we've been able to freely share operational data and information. However, in today's environment, in today's world, that's now become very difficult because the same partners that we have across the table here that we want to share data with, we have—we many times don't know if it's friend or foe until such time as it's too late.

And so the key challenge for us has been having critical infrastructure operational systems that need to be protected while still being able to share data with our interconnected utility partners, and then as the worldwide threat continues to escalate, cybersecurity is at the forefront of Southwestern's efforts as we try to protect our systems and our infrastructure across our six states in which we market energy to—to avoid any mishaps. And——

Senator CORTEZ MASTO. And is there anything——

Mr. WECH. I'm sorry.

Senator CORTEZ MASTO. No, please go ahead.

Mr. WECH. Our collaboration with the CESER office, for example, is—is one that—that is—is at the forefront right now. We are continually looking at the latest technologies, we're continuing to have those folks from that office and other offices within DOE provide recommendations for improvement, internal audits, reviews. And then in addition, of course, we have the industry standards that we need to meet, which are North American Electric Reliability coordination, critical infrastructure, protection standards for cyber, and then, of course, on the federal side, we have the FISMA standards.

Senator CORTEZ MASTO. Is there anything anybody is doing differently than what Mr. Wech just talked about, or is it pretty consistent, you are all coordinating with CESER trying to figure out what is the best system, how that you can protect your systems and address the security piece of it, cybersecurity? Is that true? Anything unique? Different?

Mr. JAMES. Well, Senator, the only thing I would add to that is that while we are working closely with each other and with industry organizations, for instance, we maintain a close working relationship with DOE counterintelligence, and we participate in the joint Government Electric Sector Coordinating Council meetings as well with other industry groups to focus and anticipate mitigating cybersecurity risks.

But for us, and I would bet that this is happening across the PMAs, this really begins with training our employees as well at the most granular level. We do phishing tests, we do lessons learned on those. We work—we do trainings every year to really train our entire workforce because they're all part of protecting the grid.

Senator CORTEZ MASTO. Yes. Are there any barriers that you are dealing with that we can help at a federal level to overcome?

Mr. GABRIEL. Well, there are a couple of things that we see. It's very easy for all of us with high-level security clearance to get information in real time. The industry has—it's difficult to get clearance for many of the other utilities that we connect to, so anything that could be done to speed that process is helpful, number one. And number two, I do get concerned that we're not trading information quickly enough, and part of that is the politics of the utility industry and part of it is the process challenge. We have got a commodity that moves at the speed of light, and very often we're not responding quickly enough as an industry overall. It's not a PMA issue as much as it is an overall electric and gas industry issue.

And that's the other component that I would add. As we become more and more reliant across the western United States in particular on natural gas, we're looking in the next year or so that 43 percent of the generation across the West will have some connection to natural gas, and there's a limited number of natural gas pipelines; therefore, potential multiservice attacks or something that we're all trying to wrestle with as an industry.

Senator CORTEZ MASTO. Thank you.

Thank you.

Senator MCSALLY. I am going to do another round if you don't mind.

Senator CORTEZ MASTO. Sure.

Senator MCSALLY. Okay.

Senator CORTEZ MASTO. You are the Chair.

Senator MCSALLY. Okay. I just want to be courteous.

A number of the PMAs' regions have considered looking at joining organized markets. For those who are studying that, what is the status of those efforts? For those who are already participating, what are your pros and cons? And are preference customers included in the decisions about market participation?

And for Mr. Gabriel specifically, in 2017, WAPA announced it was recommending the Loveland area projects and Colorado River storage projects join the Southwest Power Pool, but then there has been a step back. So what changed and where do things stand and were preference customers included in those considerations?

Mr. GABRIEL. Everything we do is all about transparency, and obviously having things—having these discussions with our customers is key to our decision-making.

In October 2015, the Upper Great Plains region, which is the Missouri River System that we manage, joined the Southwest Power Pool. That was after ten years of consideration, analysis, and trying to understand what the implications were of the market. That has turned out to be a very good decision for the customers in the Upper Great Plains. As I mentioned, earlier this past year, we had an additional $48 million of revenue, which helped lower and maintain some of the costs. The other added benefit in terms of the market for us, is that, surprisingly, the hydro units are being dispatched very quickly into the market on a flat line as opposed to chasing wind variations, so that's been a good thing.

In the bulk of the country that we serve, we had looked at joining the Southwest Power Pool, seven utilities, including two of the WAPA regions that you mentioned as well as public power entities and some IOUs, were looking at moving into SPP. Things were looking pretty good up till about a year ago, and then one of the investor-owned utilities decided that they would not join. So some of the economics around joining that market fell away.

That said, we do believe that ultimately the West will have markets. In California, for our California system, we are getting engaged with the California ISO, particularly in what is known as the energy imbalance market. Our team today is looking at an energy imbalance service opportunity, and that's where at the edge of the market, when you've got something extra, so to speak, it would go into a marketplace. We do this in lockstep with our customers. In fact, in Phoenix during—about a month ago, we brought together over 100 customers to talk about what's next given the failed effort in joining what was known as the Mountain West Transmission Group.

We do believe ultimately there will be markets in the West. That's both the—to the benefit of the transmission system which we've all invested in, but also given the vagaries of power supply, with coal plants going offline, nuclear plants changing, more renewables, a market allows a better spread of the—of the energy that's out there, and also, quite frankly, adds some liquidity to the organizations and can improve operations.

Senator MCSALLY. Thank you.

Anyone else have an issue on that topic? I have one more topic to ask.

[No response.]

Okay, great. I want to talk about fiber optics infrastructure. I know there is an assessment of fiber optics happening at WAPA. I am not clear, though, on what the purpose of that is.

Can you explain, Mr. Gabriel, what the impetus for WAPA studying the deployment of fiber optics on your rights-of-way is? Will your customers be involved in those efforts and protected from paying for capacity that may ultimately benefit others? And for any of the other PMAs, what are you doing in terms of fiber optics? And is this a DOE-led initiative? Or what's going on?

Mr. GABRIEL. During the last year, the White House put forth the prospect of having the fiber optics that were owned by the PMAs put out into the market for leasing. We decided, working with DOE, that first we needed to understand exactly what that meant. WAPA has got 17,231 miles of transmission and roughly 5,200 miles of fiber optics which are absolutely critical to grid operations. In fact, if we could, we'd have fiber optics across all the 17,000 miles. It is something that's very valuable on the utility operations side.

What we wanted to do is to make sure, however, that before the—we were asked to lease out the fiber optics, that we understood what the implications are. WAPA certainly does not want to be in the fiber optic business per se or the telecom side, and we also feel very strongly that it's important to protect the investments that our customers have made in those fiber optics.

So we are—we have promised by the end of December to deliver a report that looks at the implications of leasing fiber optics both to our customers as well as potentially to others, because I think it's important to understand for rural broadband, we reach many areas where there are no broadband opportunities. We've got several customers who have asked us, "Can we use the WAPA system in order to at least do a backup supply for fiber?"

So I want to be clear here. We're studying it. We want to understand it. There's implications. First and foremost, we're an electric utility, that's what we worry about. We also want to make sure that we have fiber for our own communications and utility operations.

Senator MCSALLY. Great. Thanks. I know I am over my time.

Ms. Fuller, do you have anything to add on that from a customer perspective?

Ms. FULLER. Sure. I'll just say, you know, the way the customers feel is that any initiative should be directly related to the PMAs' statutory mission of delivering federal hydropower and marketing it. And if it's not related, then Congress needs to expand the PMAs' mission to do so and provide funds to do so. While we think that these types of new ideas are absolutely worthwhile, I don't believe that customers should be the ones that have to subsidize it.

Senator MCSALLY. Thanks. Yes, mission creep has been a challenge and a concern for sure, so we need to be in close communication related to any of these ideas and efforts.

Senator Cortez Masto.

Senator CORTEZ MASTO. Yes, thank you. Just one final follow-up. In general, in the West, we are seeing more fires, right? Wildfires are now, unfortunately, becoming the norm. So I am curious, and maybe this is a question for Mr. James and Mr. Gabriel, how do you factor in fire risks into the transmission planning and cost allocation when we are seeing more of these wildfires and we are talking trying to not only prevent the start of fires but also to protect the infrastructure for them? Is that something new that you have been having to deal with over the last couple of years?

And maybe, Mr. James or Mr. Gabriel? However you want to do it. You choose.

Mr. GABRIEL. We certainly factor in the challenge of wildfires and wildfire mitigation in all of our costing. Every year, we've got a very aggressive vegetation management program. But more than what I'll describe as basic vegetation management, we've been working very closely with the other state and federal agencies because, as you're probably well aware, going in and cutting trees in a forest raises just as many issues as cutting trees in a neighborhood. So, therefore, we've got to really work the partnerships with the Forest Service, for example, and the Park Service, so that we can get in and make sure that we have the rights-of-way properly maintained.

It is an ongoing challenge for us, candidly, and we need to keep working with those partners, we need to keep investing in vegetation management. And as you can tell, it's—it's sort of the twin—it's the twin to the great water years, is that you get more vegetation, and, therefore, we have to anticipate the fact that it's going to be there's going to be more rain, there's going to be more vegetation, and, therefore, we have to spend a little bit more on vegetation management.

Senator CORTEZ MASTO. Thank you.

Anybody else have anything to add?

Mr. JAMES. Sure. I would say that we have had a couple of examples in the last year or two where we've had outstanding coordination with the other federal agencies, as well as the local first responders in terms of grid reliability and protection. So there is a—there is a lessons learned there each time. We also are watching what's happening throughout the West and developing mitigation plans. Vegetation management, of course, is key to our business and key to system reliability. And so we definitely make that a primary focus.

But I would say coordination across federal agencies and with the local governments and state governments is key.

Senator CORTEZ MASTO. Thank you.

Thank you, Madam Chair.

Senator MCSALLY. All right. I want to thank all the witnesses for sharing your time and expertise today.

For information of the members, questions may be submitted for the record before close of business on Thursday. The record will remain open for two weeks. We ask that you respond as promptly as possible, and your responses will be made a part of the record.

I did forget to mention, on the issue Senator Cantwell brought up, there is a letter going to the OMB Director that I got on as well objecting to the selling off of the PMAs.

With that, the Subcommittee stands adjourned.
[Whereupon, at 4:12 p.m., the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

U.S. Senate Committee on Energy and Natural Resources
Subcommittee on Water and Power
May 15, 2019 Hearing: *Issues and Challenges at the Power Marketing Administrations*
Questions for the Record Submitted to Mr. Mark Gabriel

QUESTIONS FROM SENATOR MARTHA MCSALLY

Q1. I am concerned about the recent shift in treatment of Purchase Power and Wheeling (PP&W) by the Congressional Budget Office that does not reflect the reasonable annual variance between budgeted and actual PP&W costs and how it could result in rate instability for PMA customers. Can you explain for the record the uses and importance to these funds, and, by project the authority and mechanisms for recovering of PP&W costs through rates and typical cycle for PP&W costs through rates and typical cycle for PP&W costs and recovery to net to zero?

A1. Purchase, Power and Wheeling (PPW) authority is critical to meeting WAPA's mission to deliver Federal power. WAPA maintains long-term power sale contracts with hundreds of customers serving more than 40 million end-users across 15 western states. When hydropower generation is not enough to fulfill contractual commitments, WAPA uses the PPW authority to purchase power to fulfill those contracts. WAPA also uses the PPW authority to purchase transmission services to deliver power to customers when WAPA's transmission system is constrained or when delivering power to customers not directly connected to WAPA's system. PPW authority is essential to WAPAs mission.

The PPW program is highly variable; it is affected by energy market conditions, generation and transmission system constraints, reservoir storage levels, drought conditions, and downstream flow restrictions. Flow restrictions result from many different events including icing, flooding, environmental activities, health and safety, recreation, irrigation, and navigation requirements. Adequate PPW authority is essential to meeting the variability in the program, including maintenance of reserves for responding to more severe conditions in WAPA service territory like long-term drought impacts.

The full cost of WAPA's PPW program has been and continues to be included in the rate setting process. All costs of the PPW program are borne by the power customers, at no long-term cost to the Federal Government. WAPA maintains 11 rate setting systems, five of which use the PPW receipt authority to support the PPW expenses. The five systems are Pick-Sloan Missouri Basin Program Eastern Division, Loveland Area

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Projects, Parker-Davis Project, Pacific NW-SW Intertie, and Central Valley Project. For these five systems, WAPA's current rate studies anticipate PPW costs at $411 million in FY 2020. The estimated collections implied in rate setting exceed the FY 2020 PPW collection ceiling request of $259 million.

When PPW expenses exceed that anticipated in the rate reviews, WAPA has rate tools available to support cost recovery in most cases within the current year, including drought related rate-adder formulas and application of discretionary revenue. In rare times of more severe, long term drought, as experienced in FY 2001-2008, increased costs can lead to additional rate actions with recovery over a longer reasonable period. The last significant drought occurred in Pick-Sloan Missouri Basin in FY 2001-2008. WAPA will continue to coordinate extensively with impacted customers when considering on the drought recovery approaches. For that extraordinary event, full recovery of the additional costs over that period took 10 years.

Actual PPW expenditures each year vary significantly, dependent upon water conditions, hydropower unit outages and are highest during severe drought conditions. However, WAPA must plan for a level of adversity as experienced in FY 2014, and develop risk mitigation for severe conditions, like the FY 2001-2008 drought in the Pick-Sloan Missouri Basin. The budget request and rate process provides for a level of adversity, and rate mechanisms and reserve strategies have been developed to mitigate the impacts of a severe long term drought. Continued limitations on PPW receipt authority in recent years leaves WAPA at risk of breaching its contracts, service interruptions during times of drought, and customers highly vulnerable to higher priced purchase power and rate spikes.

Q2. In your testimony before the Subcommittee you noted that the Western Area Power Administration has been examining market structures in the West and recently hosted a meeting with it customers on that topic. Will you commit to ensuring WAPA intends to follow the lead of its customers in considering whether participation in a particular market is economic and in the interest of power customers?

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A2. Yes, WAPA has and will continue to engage with our more than 700 diverse customers within our 15 state footprint to inform our consideration of participation in any organized market. We will consider the economics and the interests of WAPA and our customers in this decision to ensure WAPA's rates are consistent with applicable law and are the lowest possible costs to customers consistent with sound business principles.

Q3a. How will the recently authorized Colorado River Drought Contingency Plan affect hydropower operations within WAPA's territory?

A3a. The DCP requires action by the Bureau of Reclamation in consultation with the Colorado River Basin States in dry hydrological conditions. Positive and negative hydropower impacts will occur depending on the location of the generating facility, existing reservoir conditions and operational characteristics of the particular units.

Q3b. Has WAPA coordinated with the Bureau of Reclamation, customers, or other stakeholders to model these effects?

A3b. WAPA's Desert Southwest Region and its Colorado River Storage Project Management Center have conducted modeling of potential DCP impacts to hydropower generation in coordination with the Bureau of Reclamation, customers and other stakeholders. WAPA will continue to engage with the Bureau of Reclamation, customers and other stakeholders to represent hydropower interests in discussions about DCP, and model potential impacts to hydropower generation. WAPA is primarily interested in estimating the overall impact to the cost of hydropower if DCP is triggered and for the subsequent years when recovering from drought mitigation measures.

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QUESTION FROM SENATOR MARTHA MCSALLY

Q1. I am concerned about the recent shift in treatment of Purchase Power and Wheeling (PP&W) by the Congressional Budget Office that does not reflect the reasonable annual variance between budgeted and actual PP&W costs and how it could result in rate instability for PMA customers. Can you explain for the record the uses and importance to these funds, and, by project the authority and mechanism for recovering of PP&W costs through rates and typical cycle for PP&W costs and recovery to net to zero?

A1. This issue does not apply to the Bonneville Power Administration (Bonneville).

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QUESTION FROM SENATOR RON WYDEN

Q1. As you are aware, the president's budget for three consecutive years has proposed the selling off the Power Marketing Administration's transmission assets, including those of the Bonneville Power Administration. Can you please provide the committee with the detailed analysis the administration took to determine whether selling BPA's transmission assets is in the best interest of the customers BPA serves?

A1. The vast majority of the Nation's electricity infrastructure is owned and operated by for-profit investor owned utilities. Ownership of transmission assets is best carried out by the private sector where there are appropriate market and regulatory incentives.

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QUESTIONS FROM SENATOR JAMES E. RISCH

Q1. BPA, like many utilities in the West, is faced with various expenditures. In addition to operation and maintenance costs, infrastructure upgrades, administrative costs, BPA also pays for various costs associated with fish and wildlife. Would you please describe for the Committee what percentage of your total budget goes to pay for fish and wildlife mitigation measures and how these funds are being used?

A1. Bonneville's fish and wildlife spending is authorized by the Northwest Electric Power Planning and Conservation Act to protect, mitigate, and enhance Columbia River Basin fish and wildlife affected by Federal hydroelectric projects in the basin. Bonneville implements projects consistent with the Northwest Power and Conservation Council's (the Council) Columbia Basin Fish and Wildlife Program, the Endangered Species Act, the Federal Clean Water Act, and other laws. Bonneville also reimburses the U.S. Treasury for certain fish and wildlife projects of the U.S. Army Corps of Engineers (Corps), the Bureau of Reclamation (Reclamation), and the U.S. Fish and Wildlife Service. Bonneville also funds the functions of the Council. Finally, Bonneville incurs depreciation expense and interest on capital fish and wildlife program investments. Bonneville fish and wildlife costs, allocable to power, are fully recovered from Bonneville rate-paying customers.

Bonneville reports the details of its spending on fish and wildlife obligations in its annual budget submission to Congress. Bonneville's FY 2020 Congressional Budget shows for Fiscal Year 2018 a total of $480.2[1], million for Bonneville fish and wildlife actions. This $480.2 million amount compares to Bonneville's total expenditures in FY 2018 of $3,205.9[2] million or approximately 15 percent.

Bonneville's fish and wildlife expenditures in FY 2018 included: total program operating expenses ($347.97 million); program related fixed expenses of interest, amortization and

[1] FY 2020 DOE Congressional Budget, Volume 3, Part 1, page 403, "Total Program Expenses, Forgone Revenues, & Power Purchases".

[2] FY 2020 DOE Congressional Budget, Volume 3, Part 1, page 303, "Funding Profile by Subprograms".

depreciation on prior capital investment ($105.1 million); forgone revenue ($2.9 million), and power purchases for fish enhancement ($24.3 million). The amounts of forgone revenue and power purchases can vary significantly from year to year due to differences in streamflows, power prices, and fish operations. Bonneville expects the annual total forgone revenue and power purchases amount to be roughly $200 million, but the variation around that expected value is quite large. For example, the results from the 80 individual water years modeled have an annual total range of approximately $21 million to $314 million.

In addition, new capital fish and wildlife investments made directly by Bonneville, and by the Corps and Reclamation through Congressional appropriations totaled $83.2 million. Annual operations and maintenance costs for past capital investments are included in Bonneville's program operating expenses of $347.97 million. Annual interest, amortization, and depreciation on those past capital investments are in the $105.1 million of program related fixed expenses.

Q2. As you know, in Idaho, the Bonneville Power Administration provides electric power to approximately 16% of the state—power that generally goes to my most rural constituents. In recent years, these constituents have expressed concern with BPA's rising costs. What steps is BPA taking to lower the cost curve and are there any steps Congress could take to address these rising costs?

A2. In January 2018, Bonneville released its 2018-2023 Strategic Plan to describe how it will operate in a commercially successful manner while meeting its public responsibilities. Bonneville developed this strategic plan after listening to customers and constituents express their interests in Bonneville's commercial viability and ability to meet its statutory obligations.

Bonneville adopted the following strategic goals:

1. Strengthen financial health
2. Modernize assets and system operations
3. Provide competitive power products and services
4. Meet transmission customer needs efficiently and responsively

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Acting on these goals will put Bonneville on a path to become more competitive and responsive to customer needs, modernize assets and operations to leverage and enable industry change, and deliver on Bonneville's public responsibilities through a commercially successful business.

Following release of its 2018 – 2023 Strategic Plan, Bonneville issued its 2018 Financial Plan. The Financial Plan provides a framework for decision-making by defining the financial constraints within which Bonneville operates and establishing objectives to strengthen financial health. The three financial health objectives outlined in the financial plan are: improve cost-management discipline, build financial resiliency and maintain a strong independent financial health assessment. Bonneville will work collaboratively with its customers and stakeholders through public processes to determine the best course of action toward meeting its three financial health objectives.

In preparing for the Fiscal Year 2020 and 2021 rate period, Bonneville initiated a renewed focus on cost management. Bonneville took aggressive steps to manage the rising costs of operating the federal power and transmission systems, starting by establishing a cost-management goal to keep the sum of program costs, by business line, at or below the rate of inflation through 2028.

To meet this goal, and in response to customer input, Bonneville initiated a new approach for setting spending levels during its Integrated Program Review (IPR) public process. The IPR is the public review process for the costs that will be recovered through rates during the following two-year rate period. Instead of Bonneville's past practice of determining program costs through a bottom-up approach, Bonneville leadership set firm cost constraints at the start of the process in alignment with this cost-management objective.

This effort resulted in Bonneville's initial power rates proposal for Fiscal Years 2020 and 2021 with an increase in the average Priority Firm Power rate of 2.9 percent over the two-year period, or 1.4 percent annually. The rate proposal is below the rate of inflation and reflects the progress Bonneville has made in managing its costs. Bonneville will make its final decision on rates in July.

Bonneville believes it has adequate authorities to manage its costs in this manner while meeting its statutory obligations.

Q3. BPA has been analyzing participation in the California EIM market. Can you please provide an update on the status of that effort, what potential costs and benefits of joining a market have been identified, and what governance accommodations has California indicated it is willing to ensure that California state policy can't be forced on BPA rate payers in my state?

A3. Bonneville initiated consideration of participating in the Energy Imbalance Market (EIM) last year. Bonneville has held monthly public meetings since July 2018 to review the status of its analysis and invite comments and questions from Bonneville customers and other interested parties in the region. Bonneville expects to release a draft implementation agreement with a letter to the region in the next month. Bonneville will invite additional public comment on the letter to the region before making a decision to go forward.

In May, Bonneville presented the estimates of costs and potential benefits from participation in the EIM. This initial estimate is of annual ongoing costs of $6.2 million against gross benefits of $48.9 million for a net annual benefit of $42.7 million.

Currently, governance of the EIM is provided by an independent Governing Body in coordination with the California Independent System Operator Board of Governors. Both bodies have initiated a process to review governance of the EIM and consider revisions to functions and authorities with the expansion of EIM participation and the potential addition of market functions such as day-ahead enhancements. Bonneville supports this review, and has commented on the proposed review, but is considering its participation in the EIM as it is currently governed. It is important to note that participation in the EIM is voluntary. Bonneville and other participants may leave the EIM if desired.

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QUESTION FROM SENATOR MARTHA MCSALLY

Q1. I am concerned about the recent shift in treatment of Purchase Power and Wheeling (PP&W) by the Congressional Budget Office that does not reflect the reasonable annual variance between budgeted and actual PP&W costs and how it could result in rate instability for PMA customers. Can you explain for the record the uses and importance to these funds, and, by project the authority and mechanism for recovering of PP&W costs through rates and typical cycle for PP&W costs and recovery to net to zero?

A1. Purchase Power and Wheeling (PPW) provides funds for acquisition of transmission services, ancillary services for the system, pumping energy for the Richard B. Russell and Carters Pumped Storage units, and support of the Jim Woodruff Project. Southeastern must purchase power on the open market when its Federal generating assets cannot provide enough power to fulfill its contracts with its customers. Additionally, because Southeastern does not own or operate any transmission infrastructure, transmission expenses are based on contracts with area transmission providers to deliver specified amounts of Federal power from the hydropower projects to Federal power customers.

PPW funds are necessary to pay the costs of wholesale energy purchased to meet contractual minimum energy sold to the preference customers through power sales contracts. If there are drought conditions, major outages or other operating conditions affecting generation, Southeastern must be able to purchase replacement energy in order to provide power sales contract customers with reliable, firm power. Southeastern must also have PPW funds available to pay for costs of wholesale energy purchased to operate reversible pump turbine generators when streamflow is inadequate to make conventional hydroelectric generation dependable. If funding is not available for replacement energy and pumping operations, a risk arises that Southeastern is unable to meet contracted energy delivery obligations. If contractual obligations for delivery of Federal hydropower are not met, reductions to revenue could affect the recovery of annual costs and the repayment of Federal investment.

Southeastern rate schedules for replacement and pumping energy provide for a monthly charge to customers to recover their share of the service month's purchased power cost

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incurred by Southeastern for wholesale energy purchased within each power marketing system. When Southeastern incurs purchased power costs for one of four systems, those costs are reflected on the system customers' power invoices, billed as a pass-through, when the invoice is prepared at the beginning of the next month. The rate schedules do not define a rate in dollar value per kilowatt-hour, but define the monthly charge as Southeastern's actual monthly cost. Revenue collected from customers for replacement and pumping energy through power invoicing is a match of the actual cost, but it is collected in the following month's receipts.

Southeastern has interpreted the use of receipt authority as a funding mechanism for PPW disbursements and annually requests a level for the PPW collection ceiling that will match the estimated expenditures for the year. This allows Southeastern to reclassify receipts up to the PPW collection ceiling for a fiscal year. At the end of a fiscal year, if room is available within the ceiling, Southeastern may reclassify sufficient collections to provide for carryover for three months of estimated PPW expenditures. Unobligated balance carryover provides a funding mechanism for PPW obligations at the beginning of a fiscal year before receipts for that year are received. Funding delays could result in contractual deliveries of energy not being possible. The typical net to zero cycle for PPW cost and recovery is a fiscal year.

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QUESTION FROM SENATOR JOE MANCHIN

Q1. In recent years, Southeastern Power Administration (SEPA) has reported no marketing activities in West Virginia. Given the numerous Army Corps dams in the state, there seems to be a tremendous opportunity to power non-powered facilities and perform other upgrades as appropriate. For any federal hydropower projects in SEPA's territory, does SEPA have a role to play in marketing that power? Whether these projects are upgrades or powering non-powered facilities, what is the outlook for marketing the electricity that might be generated at these facilities?

A1. Under the Flood Control Act of 1944, all power produced by the U.S. Army Corps of Engineers (Army Corps) at reservoir projects in the State of West Virginia and not required for the operations would be delivered to SEPA for marketing to preference entities. Currently, there is no surplus power produced by the Army Corps at any West Virginia reservoir. The Army Corps Hydropower Analysis Center has studied adding power generation to 10 West Virginia reservoirs as recently as July 2013. SEPA began marketing power from Stonewall Jackson Dam in 1994. SEPA was unable to find a preference entity to purchase the power and sold the energy to an investor-owned utility until hydroelectric operations ended in 2006. The Army Corps is also authorized under Section 547 of the Water Resources Development Act of 2000, 114 STAT. 2572, to allow hydropower facilities at Bluestone Dam, although there are no plans to complete said project. SEPA is unaware of any other plans by the Army Corps to add hydropower to other projects in West Virginia. As SEPA's rates are based upon the recovery of project development, construction and power production costs, the outlook for marketing any new electricity would be directly related to the Army Corps' cost estimates of any new project and the costs associated with acquiring transmission for power delivery from that new project to preference customers.

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QUESTION FROM SENATOR MARTHA MCSALLY

Q1. I am concerned about the recent shift in treatment of Purchase Power and Wheeling (PP&W) by the Congressional Budget Office that does not reflect the reasonable annual variance between budgeted and actual PP&W costs and how it could result in rate instability for PMA customers. Can you explain for the record the uses and importance to these funds, and, by project the authority and mechanism for recovering of PP&W costs through rates and typical cycle for PP&W costs and recovery to net to zero?

A1. Southwestern Power Administration (SWPA) relies heavily on Purchase Power and Wheeling (PPW) use-of-receipts authority to plan for and respond to severe drought and other circumstances when power generation at Federal dams is insufficient to fulfill contractual power commitments, requiring SWPA to purchase power to fulfill its obligations. The greater our financial flexibility, the greater rate stability we can provide our customers on PPW expenses while meeting our responsibilities to market Federal hydropower at the lowest possible cost and repay all Federal investment and costs. In the fiscal year (FY) 2020 Budget, SWPA requested $83 million as the level for the PPW collection ceiling. The request is based on analysis of PPW funding needed for severe drought conditions in SWPA's marketing area. Actual PPW expenditures each FY vary significantly, dependent upon water conditions and hydropower unit outages, and are highest during severe drought conditions. Inadequate PPW funding in any given FY places SWPA at risk of: higher rates to customers, rate spikes, interruption or discontinuance of service, litigation, and ultimately uncertainty of recovery of annual costs and repayment of the Federal investment.

Unlike other regions in the country that have large storage reservoirs and mountains with ice and snowpack that provide natural water storage, SWPA's region has limited storage and drought can occur in as little as three months. Therefore, given its statutory responsibility to use sound business principles, SWPA must proactively plan and prepare for quickly emerging drought conditions in each and every FY. SWPA does this by both employing an unobligated balance strategy with its PPW funds and ensuring an adequate PPW collection ceiling to reclassify receipts for PPW in the event those funds are depleted during extended drought conditions. As not every FY brings drought conditions, there will be some years during which the full extent of SWPA's requested $83 million PPW collection ceiling is not needed and will appropriately not be fully

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utilized. But future water conditions are not predictable, which is why SWPA requests a level for the PPW collection ceiling in its Budget each FY based on the anticipated need through severe drought conditions. Continued significant reductions in PPW use-of-receipts authority leaves SWPA at risk of being unable to fulfill its contractual obligations and customers highly vulnerable to higher priced purchase power and rate spikes.

Without sufficient PPW use-of-receipts authority, SWPA would have to rely on use of the Continuing Fund, which is also limited to receipts on-hand, does not allow for unobligated balance carryover, and requires repayment within 12 months. Using the Continuing Fund is a reactive approach that does not allow for proactive planning, whereas the use-of-receipts authority allows SWPA to proactively replenish PPW funds on-hand. The limitations of the Continuing Fund can cause rate spikes to SWPA's customers, resulting in economic impacts that are especially severe to SWPA's smaller municipal customers. Funding PPW expenses through the use-of-receipts authority allows for smoother adjustments to the rates if needed.

All expenses, including PPW costs, must be recovered through SWPA's revenue and repaid to the Treasury irrespective of how the costs were funded. Because the PPW expenses are highly variable, SWPA has designed its rates to smooth rate spikes to customers while bringing in revenue that fully recovers all PPW costs. SWPA utilizes a rate component in its Integrated System rates to recover average year PPW costs, based on period-of-record hydrology and current PPW prices. An additional rate component is available to make limited short-term revenue adjustments to recover costs stemming from more extreme water conditions. These rates are charged to SWPA's customers who receive Federal power and energy. In drought situations, as has occurred in the past, when SWPA's PPW costs exceed the rate components' ability to recover sufficient revenues for repayment, a rate change is implemented to ensure repayment of the unrecovered costs generally within a three- to five-year period. In years of better than average water conditions, the rate components will create more revenue than expenses incurred for PPW, and the balance is carried forward for the repayment of future years' PPW costs. Therefore, repayment of SWPA's PPW costs typically occurs within one year, but in times of more severe drought, PPW repayment can take three to five years.